Nos. 00-511, 00-555, 00-587, 00-590 and 00-602

Supreme Court, U.S.
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IN THE

Supreme Court of the United States

OCTOBER TERM, 2000

VERIZON COMMUNICATIONS INC., *ET AL.*,
Petitioners,

v.

FEDERAL COMMUNICATIONS COMMISSION AND THE UNITED STATES OF AMERICA, *ET AL.*,
Respondents.

On Writs of Certiorari to the United States Court of Appeals for the Eighth Circuit

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JOINT APPENDIX
VOLUME I

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NOTICE

The following document has been omitted in the printing of Volume I of this Appendix. It may be found in Appendix A to Verizon Communications Inc.'s Petition for Writ of Certiorari at the following pages:

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FEDERAL COMMUNICATIONS COMMISSION

No. 96-98
IMPLEMENTATION OF THE LOCAL COMPETITION PROVISIONS OF THE TELECOMMUNICATIONS ACT OF 1996

RELEVANT DOCKET ENTRIES

Date	Proceedings
04/19/1996	DOC TYPE: NPRM APPL: COMMON CARRIER BUREAU LAW FIRM: FCC RELEASE/DENIED
08/01/1996	DOC TYPE: R&O APPL: COMMON CARRIER BUREAU LAW FIRM: FCC RELEASE/DENIED: 08/08/96 FCC/DA#: 96-325

UNITED STATES COURT OF APPEALS
FOR THE EIGHTH CIRCUIT

No. 96-3321

IOWA UTILITIES BOARD

v.

FCC

RELEVANT DOCKET ENTRIES

Date	Proceedings
9/6/96	PETITION for Review of an order of the FCC
9/13/96	Consolidation Order issued by Judicial Panel on Multidistrict Litigation: Eighth Circuit designated to hear petitions for review from the District of Columbia, Second, Fifth, Sixth and Eighth Circuits.
1/17/97	ARGUED AND SUBMITTED IN ST. LOUIS TO JUDGES Pasco M. Bowman, Circuit Judge, Roger L. Wollman, Circuit Judge, David R. Hansen, Circuit Judge.

Date	Proceedings
7/18/97	THE COURT: Pasco M. Bowman, Roger L. Wollman, David R. Hansen. OPINION FILED by David R. Hansen PUBLISHED [96-3321, 96-3406, 96-3410, 96-3414, 96-3416, 96-3418, 96-3424, 96-3430, 96-3436, 96-3444, 96-3450, 96-3453, 96-3460, 96-3507, 96-3519, 96-3520, 96-3603, 96-3608, 96-3696, 96-3708, 96-3709, 96-3756, 96-3901, 96-3906, 96-3982] [878357] (ema) [96-3321 96-3406 96-3410 96-3414 96-3416 96-3418 96-3424 96-3430 96-3436 96-3444 96-3450 96-3453 96-3460 96-3507 96-3519 96-3520 96-3603 96-3608 96-3696 96-3708 96-3709 96-3756 96-3901 96-3906 96-3982]
7/18/97	JUDGMENT: Pasco M. Bowman, Roger L. Wollman, David R. Hansen: The order of the FCC is AFFIRMED, and VACATED in accordance with the opinion.[96-3321, 96-3406, 96-3410, 96-3414, 96-3416, 96-3418, 96-3424, 96-3430, 96-3436, 96-3444, 96-3450, 96-3453, 96-3460, 96-3507, 96-3519, 96-3520, 96-3603, 96-3608, 96-3696, 96-3708, 96-3709, 96-3756, 96-3901, 96-3906, 96-3982] [878360] (ema) [96-3321 96-3406 96-3410 96-3414 96-3416 96-3418 96-3424 96-3430 96-3436 96-3444 96-3450 96-3453 96-3460 96-3507 96-3520 96-3603 96-3608 96-3696 96-3708 96-3709 96-3756 96-3901 96-3906 96-3982]

Date	Proceedings
2/25/99	Notification from Supreme Court stating that they had entered an order granting Supreme Court notice for certiorari (no paper document received, ruling on pending certs filed) [946067-1] [96-3321, 96-3406, 96-3410, 96-3414, 96-3416, 96-3418, 96-3424, 96-3430, 96-3436, 96-3444, 96-3450, 96-3453, 96-3460, 96-3507, 96-3519, 96-3520, 96-3603, 96-3608, 96-3696, 96-3708, 96-3709, 96-3756, 96-3901, 96-3906, 96-3982, 96-4080, 96-4082, 96-4083] [1188976] Supreme Court notice for certiorari [946075-1] [1188976] granting Supreme Court notice for certiorari [946086-1] [1188976] granting Supreme Court notice for certiorari [927038-1] [1188976] granting Supreme Court notice for certiorari [927052-1] [1188976] granting Supreme Court notice for certiorari [927056-1] [1188976] granting Supreme Court notice for certiorari [927061-1] [1188976] (cmw) [96-3321 96-3406 96-3410 96-3414 96-3416 96-3418 96-3424 96-3430 96-3436 96-3444 96-3450 96-3453 96-3460 96-3507 96-3519 96-3520 96-3603 96-3608 96-3696 96-3708 96-3709 96-3756 96-3901 96-3906 96-3982 96-4080 96-4082 96-4083]

Date	Proceedings
3/1/99	U.S. Supreme Court judgment filed: The judgment of July 18, 1997, is reversed in part and affirmed in part; the judgment of August 22, 1997, is reversed in part; and the cases are remanded to the United States Court of Appeals for Eighth Circuit for further proceedings in conformity with the opinion of this Court. It is further ordered that AT&T Corp., et al., recover from Iowa Utilities Board, et al., and California, et al., $300.00; MCI Telecommunications Corp. recover from Iowa Utilities Board, et al., and California, et al., $20,024.49; Assn. for Local Telecommunications Services, et al., recover from Iowa Utilities Board, et al., $300.00; Ameritech Corp., et al., recover from FCC, et al., $300.00; GTE Midwest, Inc., recover from FCC, et al. $300.00; US West, Inc., recover from FCC, et al., $300.00; and Southern New England Telephone Company, et al., recover from FCC $300.00 for costs herein expended. Filed in the Supreme Court on January 25, 1999.[96-3321, 96-3406, 96-3410, 96-3414, 96-3416, 96-3418, 96-3424, 96-3430, 96-3436, 96-3444, 96-3450, 96-3453, 96-3460, 96-3507, 96-3519, 96-3520, 96-3603, 96-3608, 96-3696, 96-3708, 96-3709, 96-3756, 96-3901, 96-3906, 96-3982] [1101417] (mjh) [96-3321 96-3406 96-3410 96-3414 96-3416 96-3418 96-3424 96-3430 96-3436 96-3444 96-3450 96-3453 96-3460 96-3507 96-3519 96-3520 96-3603 96-3608 96-3696 96-3708 96-3709 96-3756 96-3901 96-3906 96-3982]

Date	Proceedings
6/10/99	JUDGE ORDER: In accordance with the Supreme Court's decision in AT&T Corp. v. Iowa Utilities Board, this court's judgment of July 18, 1997, and October 14, 1997, is vacated in part reinstating selected FCC rules. The remaining issues are to be argued Friday, September 17, 1999, in St. Louis, Missouri. A supplemental briefing is as follows: July 16, 1999, Petitioners and Supporting Intervenors' briefs due; August 16, 1999, FCC & United States brief due. Supplemental briefs limited to 28,000 words; reply briefs limited to 14,000 word. [96-3321, 96-3406, 96-3410, 96-3414, 96-3416, 96-3418, 96-3424, 96-3430, 96-3436, 96-3444, 96-3450, 96-3453, 96-3460, 96-3507, 96-3520, 96-3603, 96-3608, 96-3696, 96-3708, 96-3709, 96-3756, 96-3901, 96-3906, 96-3982] [1142947] (mjh) [96-3321 96-3406 96-3410 96-3414 96-3416 96-3418 96-3424 96-3430 96-3436 96-3444 96-3450 96-3453 96-3460 96-3507 96-3520 96-3603 96-3608 96-3696 96-3708 96-3709 96-3756 96-3901 96-3906 96-3982]

Date	Proceedings
9/17/99	ARGUED AND SUBMITTED IN ST. LOUIS TO JUDGES Roger L. Wollman, Circuit Judge, Pasco M. Bowman, Circuit Judge, David R. Hansen, Circuit Judge. William P. Barr for Petitioners on Appeal Regional Bell & GTE in 96-3321+. Maureen Mahoney for Petitioners U.S. Telephone Assoc., et al., in 96-3321+. Christopher Wright for Respondents on Appeal FCC in 96-3321+. Donald B. Verrilli for Intervenors on Appeal MCI in 96-3321+. Rebuttal by: William Barr and Maureen Mahoney. RECORDED.[96-3321, 96-3406, 96-3410, 96-3414, 96-3416, 96-3418, 96-3424, 96-3430, 96-3436, 96-3444, 96-3450, 96-3453, 96-3460, 96-3507, 96-3520, 96-3603, 96-3608, 96-3696, 96-3708, 96-3709, 96-3756, 96-3901, 96-3906, 96-3982] (kms) [96-3321 96-3406 96-3410 96-3414 96-3416 96-3418 96-3424 96-3430 96-3436 96-3444 96-3450 96-3453 96-3460 96-3507 96-3520 96-3603 96-3608 96-3696 96-3708 96-3709 96-3756 96-3901 96-3906 96-3982]
7/18/00	THE COURT: Roger L. Wollman, Pasco M. Bowman, David R. Hansen. OPINION FILED by David R. Hansen PUBLISHED .[96-3321, 96-3406, 96-3410, 96-3414, 96-3416, 96-3418, 96-3424, 96-3430, 96-3436, 96-3444, 96-3450, 96-3453, 96-3460, 96-3507, 96-3520, 96-3603, 96-3608, 96-3696, 96-3708, 96-3709, 96-3756, 96-3901, 96-3906, 96-3982] [1291785] (kas) [96-3321 96-3406 96-3410 96-3414 96-3416 96-3418 96-3424 96-3430 96-3436 96-3444 96-3450 96-3453 96-3460 96-3507 96-3520 96-3603 96-3608 96-3696 96-3708 96-3709 96-3756 96-3901 96-3906 96-3982]

Date	Proceedings
7/18/00	JUDGMENT: Roger L. Wollman, Pasco M. Bowman, David R. Hansen It is hereby ordered and adjudged that petitions for review are granted in part, and that the FCC rules 47 C.F.R. Sections 51.505(b)(1), 51.609, 51.513, 51.611, 51.707, 51.317, 51.405(a),(c), and (d), and 51.303 are vacated. The court reaffirms its previous decision to vacate FCC rules 47 C.F.R. Sections 51.305(a)(4), 51.311(c), and 51.315(c)-(f). In all other respects, the petitions for review are denied.96-3321, 96-3406, 96-3410, 96-3414, 96-3416, 96-3418, 96-3424, 96-3430, 96-3436, 96-3444, 96-3450, 96-3453, 96-3460, 96-3507, 96-3520, 96-3603, 96-3608, 96-3696, 96-3708, 96-3709, 96-3756, 96-3901, 96-3906, 96-3982] [1291794] (kas) [96-3321 96-3406 96-3410 96-3414 96-3416 96-3418 96-3424 96-3430 96-3436 96-3444 96-3450 96-3453 96-3460 96-3507 96-3520 96-3603 96-3608 96-3696 96-3708 96-3709 96-3756 96-3901 96-3906 96-3982]

47 U.S.C. § 153

§ 153. Definitions

* * *

(29) Network element

The term "network element" means a facility or equipment used in the provision of a telecommunications service. Such term also includes features, functions, and capabilities that are provided by means of such facility or equipment, including subscriber numbers, databases, signaling systems, and information sufficient for billing and collection or used in the transmission, routing, or other provision of a telecommunications service.

47 U.S.C. § 201

§ 201. Service and Charges

* * *

(b) All charges, practices, classifications, and regulations for and in connection with such communication service, shall be just and reasonable, and any such charge, practice, classification, or regulation that is unjust or unreasonable is declared to be unlawful: Provided, That communications by wire or radio subject to this chapter may be classified into day, night, repeated, unrepeated, letter, commercial, press, Government, and such other classes as the Commission may decide to be just and reasonable, and different charges may be made for the different classes of communications: Provided further, That nothing in this chapter or in any other provision of law shall be construed to prevent a common carrier subject to this chapter from entering into or operating under any contract with any common carrier not subject to this chapter, for the exchange of their services, if the Commission is of the opinion that such contract is not contrary to the public interest: Provided further, That nothing in this chapter or in any other provision of law shall prevent a common carrier subject to this chapter from furnishing reports of positions of ships at sea to newspapers of general circulation, either at a nominal charge or without charge, provided the name of such common carrier is displayed along with such ship position reports. The Commission may prescribe such rules and regulations as may be necessary in the public interest to carry out the provisions of this chapter.

47 U.S.C. § 251

§ 251. Interconnection

(a) General duty of telecommunications carriers - Each telecommunications carrier has the duty--

(1) to interconnect directly or indirectly with the facilities and equipment of other telecommunications carriers; and

(2) not to install network features, functions, or capabilities that do not comply with the guidelines and standards established pursuant to section 255 or 256 of this title.

(b) Obligations of all local exchange carriers - Each local exchange carrier has the following duties:

(1) Resale - The duty not to prohibit, and not to impose unreasonable or discriminatory conditions or limitations on, the resale of its telecommunications services.

(2) Number portability - The duty to provide, to the extent technically feasible, number portability in accordance with requirements prescribed by the Commission.

(3) Dialing parity - The duty to provide dialing parity to competing providers of telephone exchange service and telephone toll service, and the duty to permit all such providers to have nondiscriminatory access to telephone numbers, operator services, directory assistance, and directory listing, with no unreasonable dialing delays.

(4) Access to rights-of-way - The duty to afford access to the poles, ducts, conduits, and rights-of-way of such carrier to competing providers of telecommunications services on rates, terms, and conditions that are consistent with section 224 of this title.

(5) Reciprocal compensation - The duty to establish reciprocal compensation arrangements for the transport and termination of telecommunications.

(c) Additional obligations of incumbent local exchange carriers - In addition to the duties contained in subsection (b) of this section, each incumbent local exchange carrier has the following duties:

(1) Duty to negotiate - The duty to negotiate in good faith in accordance with section 252 of this title the particular terms and conditions of agreements to fulfill the duties described in paragraphs (1) through (5) of subsection (b) of this section and this subsection. The requesting telecommunications carrier also has the duty to negotiate in good faith the terms and conditions of such agreements.

(2) Interconnection - The duty to provide, for the facilities and equipment of any requesting telecommunications carrier, interconnection with the local exchange carrier's network–

(A) for the transmission and routing of telephone exchange service and exchange access;

(B) at any technically feasible point within the carrier's network;

(C) that is at least equal in quality to that provided by the local exchange carrier to itself or to any

subsidiary, affiliate, or any other party to which the carrier provides interconnection; and

(D) on rates, terms, and conditions that are just, reasonable, and nondiscriminatory, in accordance with the terms and conditions of the agreement and the requirements of this section and section 252 of this title.

(3) Unbundled access - The duty to provide, to any requesting telecommunications carrier for the provision of a telecommunications service, nondiscriminatory access to network elements on an unbundled basis at any technically feasible point on rates, terms, and conditions that are just, reasonable, and nondiscriminatory in accordance with the terms and conditions of the agreement and the requirements of this section and section 252 of this title. An incumbent local exchange carrier shall provide such unbundled network elements in a manner that allows requesting carriers to combine such elements in order to provide such telecommunications service.

(4) Resale - The duty--

(A) to offer for resale at wholesale rates any telecommunications service that the carrier provides at retail to subscribers who are not telecommunications carriers; and

(B) not to prohibit, and not to impose unreasonable or discriminatory conditions or limitations on, the resale of such telecommunications service, except that a State commission may, consistent with regulations prescribed by the Commission under this section, prohibit a reseller that obtains at wholesale rates a telecommunications service that is available at retail only to a category of subscribers from offering such service to a different category of subscribers.

(5) Notice of changes - The duty to provide reasonable public notice of changes in the information necessary for the transmission and routing of services using that local exchange carrier's facilities or networks, as well as of any other changes that would affect the interoperability of those facilities and networks.

(6) Collocation - The duty to provide, on rates, terms, and conditions that are just, reasonable, and nondiscriminatory, for physical collocation of equipment necessary for interconnection or access to unbundled network elements at the premises of the local exchange carrier, except that the carrier may provide for virtual collocation if the local exchange carrier demonstrates to the State commission that physical collocation is not practical for technical reasons or because of space limitations.

(d) Implementation -

(1) In general - Within 6 months after February 8, 1996, the Commission shall complete all actions necessary to establish regulations to implement the requirements of this section.

(2) Access standards - In determining what network elements should be made available for purposes of subsection (c)(3) of this section, the Commission shall consider, at a minimum, whether--

(A) access to such network elements as are proprietary in nature is necessary; and

(B) the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer.

(3) Preservation of State access regulations - In prescribing and enforcing regulations to implement the requirements of this section, the Commissior shall not preclude the enforcement of any regulation, order, or policy of a State commission that--

(A) establishes access and interconnection obligations of local exchange carriers;

(B) is consistent with the requirements of this section; and

(C) does not substantially prevent implementation of the requirements of this section and the purposes of this part.

(e) Numbering administration -

(1) Commission authority and jurisdiction - The Commission shall create or designate one or more impartial entities to administer telecommunications numbering and to make such numbers available on an equitable basis. The Commission shall have exclusive jurisdiction over those portions of the North American Numbering Plan that pertain to the United States. Nothing in this paragraph shall preclude the Commission from delegating to State commissions or other entities all or any portion of such jurisdiction.

(2) Costs - The cost of establishing telecommunications numbering administration arrangements and number portability shall be borne by all telecommunications carriers on a competitively neutral basis as determined by the Commission.

(3) Universal emergency telephone number - The Commission and any agency or entity to which the Commission has delegated authority under this subsection shall designate 9-1-1 as the universal emergency telephone number within the

United States for reporting an emergency to appropriate authorities and requesting assistance. The designation shall apply to both wireline and wireless telephone service. In making the designation, the Commission (and any such agency or entity) shall provide appropriate transition periods for areas in which 9-1-1 is not in use as an emergency telephone number on October 26, 1999.

(f) Exemptions, suspensions, and modifications -

(1) Exemption for certain rural telephone companies -

(A) Exemption - Subsection (c) of this section shall not apply to a rural telephone company until (i) such company has received a bona fide request for interconnection, services, or network elements, and (ii) the State commission determines (under subparagraph (B)) that such request is not unduly economically burdensome, is technically feasible, and is consistent with section 254 of this title (other than subsections (b)(7) and (c)(1)(D) thereof).

(B) State termination of exemption and implementation schedule - The party making a bona fide request of a rural telephone company for interconnection, services, or network elements shall submit a notice of its request to the State commission. The State commission shall conduct an inquiry for the purpose of determining whether to terminate the exemption under subparagraph (A). Within 120 days after the State commission receives notice of the request, the State commission shall terminate the exemption if the request is not unduly economically burdensome, is technically feasible, and is consistent with section 254 of this title (other than subsections (b)(7) and (c)(1)(D) thereof). Upon termination of the exemption, a State commission shall establish an implementation schedule for compliance with the

request that is consistent in time and manner with Commission regulations.

(C) Limitation on exemption - The exemption provided by this paragraph shall not apply with respect to a request under subsection (c) of this section, from a cable operator providing video programming, and seeking to provide any telecommunications service, in the area in which the rural telephone company provides video programming. The limitation contained in this subparagraph shall not apply to a rural telephone company that is providing video programming on February 8, 1996.

(2) Suspensions and modifications for rural carriers - A local exchange carrier with fewer than 2 percent of the Nation's subscriber lines installed in the aggregate nationwide may petition a State commission for a suspension or modification of the application of a requirement or requirements of subsection (b) or (c) of this section to telephone exchange service facilities specified in such petition. The State commission shall grant such petition to the extent that, and for such duration as, the State commission determines that such suspension or modification--

(A) is necessary--

(i) to avoid a significant adverse economic impact on users of telecommunications services generally;

(ii) to avoid imposing a requirement that is unduly economically burdensome; or

(iii) to avoid imposing a requirement that is technically infeasible; and

(B) is consistent with the public interest, convenience, and necessity.

The State commission shall act upon any petition filed under this paragraph within 180 days after receiving such petition.

Pending such action, the State commission may suspend enforcement of the requirement or requirements to which the petition applies with respect to the petitioning carrier or carriers.

(g) Continued enforcement of exchange access and interconnection requirements - On and after February 8, 1996, each local exchange carrier, to the extent that it provides wireline services, shall provide exchange access, information access, and exchange services for such access to interexchange carriers and information service providers in accordance with the same equal access and nondiscriminatory interconnection restrictions and obligations (including receipt of compensation) that apply to such carrier on the date immediately preceding February 8, 1996 under any court order, consent decree, or regulation, order, or policy of the Commission, until such restrictions and obligations are explicitly superseded by regulations prescribed by the Commission after February 8, 1996. During the period beginning on February 8, 1996 and until such restrictions and obligations are so superseded, such restrictions and obligations shall be enforceable in the same manner as
regulations of the Commission.

(h) Definition of incumbent local exchange carrier -

(1) Definition - For purposes of this section, the term 'incumbent local exchange carrier' means, with respect to an area, the local exchange carrier that--

(A) on February 8, 1996, provided telephone exchange service in such area; and

(B) (i) on February 8, 1996, was deemed to be a member of the exchange carrier association pursuant to

section 69.601(b) of the Commission's regulations (§ 47 C.F.R. 69.601(b)); or

(ii) is a person or entity that, on or after February 8, 1996, became a successor or assign of a member described in clause (i).

(2) Treatment of comparable carriers as incumbents - The Commission may, by rule, provide for the treatment of a local exchange carrier (or class or category thereof) as an incumbent local exchange carrier for purposes of this section if--

(A) such carrier occupies a position in the market for telephone exchange service within an area that is comparable to the position occupied by a carrier described in paragraph (1);

(B) such carrier has substantially replaced an incumbent local exchange carrier described in paragraph (1); and

(C) such treatment is consistent with the public interest, convenience, and necessity and the purposes of this section.

(i) Savings provision - Nothing in this section shall be construed to limit or otherwise affect the Commission's authority under section 201 of this title.

47 U.S.C. § 252

§ 252. Procedures for negotiation, arbitration, and approval of agreements

(a) Agreements arrived at through negotiation -

(1) Voluntary negotiations - Upon receiving a request for interconnection, services, or network elements pursuant to section 251 of this title, an incumbent local exchange carrier may negotiate and enter into a binding agreement with the requesting telecommunications carrier or carriers without regard to the standards set forth in subsections (b) and (c) of section 251 of this title. The agreement shall include a detailed schedule of itemized charges for interconnection and each service or network element included in the agreement. The agreement, including any interconnection agreement negotiated before February 8, 1996, shall be submitted to the State commission under subsection (e) of this section.

(2) Mediation - Any party negotiating an agreement under this section may, at any point in the negotiation, ask a State commission to participate in the negotiation and to mediate any differences arising in the course of the negotiation.

(b) Agreements arrived at through compulsory arbitration -

(1) Arbitration - During the period from the 135th to the 160th day (inclusive) after the date on which an incumbent local exchange carrier receives a request for negotiation under this section, the carrier or any other party to the negotiation may petition a State commission to arbitrate any open issues.

(2) Duty of petitioner -

(A) A party that petitions a State commission under paragraph (1) shall, at the same time as it submits the petition, provide the State commission all relevant documentation concerning--

(i) the unresolved issues;

(ii) the position of each of the parties with respect to those issues; and

(iii) any other issue discussed and resolved by the parties.

(B) A party petitioning a State commission under paragraph (1) shall provide a copy of the petition and any documentation to the other party or parties not later than the day on which the State commission receives the petition.

(3) Opportunity to respond - A non-petitioning party to a negotiation under this section may respond to the other party's petition and provide such additional information as it wishes within 25 days after the State commission receives the petition.

(4) Action by State commission -

(A) The State commission shall limit its consideration of any petition under paragraph (1) (and any response thereto) to the issues set forth in the petition and in the response, if any, filed under paragraph (3).

(B) The State commission may require the petitioning party and the responding party to provide such information as may be necessary for the State commission to reach a decision on the unresolved issues. If any party refuses or fails unreasonably to respond on a timely basis to any reasonable request from the State commission, then the State commission may proceed on the basis of the best information available to it from whatever source derived.

(C) The State commission shall resolve each issue set forth in the petition and the response, if any, by

imposing appropriate conditions as required to implement subsection (c) of this section upon the parties to the agreement, and shall conclude the resolution of any unresolved issues not later than 9 months after the date on which the local exchange carrier received the request under this section.

(5) Refusal to negotiate - The refusal of any other party to the negotiation to participate further in the negotiations, to cooperate with the State commission in carrying out its function as an arbitrator, or to continue to negotiate in good faith in the presence, or with the assistance, of the State commission shall be considered a failure to negotiate in good faith.

(c) Standards for arbitration - In resolving by arbitration under subsection (b) of this section any open issues and imposing conditions upon the parties to the agreement, a State commission shall--

(1) ensure that such resolution and conditions meet the requirements of section 251 of this title, including the regulations prescribed by the Commission pursuant to section 251 of this title;

(2) establish any rates for interconnection, services, or network elements according to subsection (d) of this section; and

(3) provide a schedule for implementation of the terms and conditions by the parties to the agreement.

(d) Pricing standards -

(1) Interconnection and network element charges - Determinations by a State commission of the just and

reasonable rate for the interconnection of facilities and equipment for purposes of subsection (c)(2) of section 251 of this title, and the just and reasonable rate for network elements for purposes of subsection (c)(3) of such section--

(A) shall be--

(i) based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the interconnection or network element (whichever is applicable), and

(ii) nondiscriminatory, and

(B) may include a reasonable profit.

(2) Charges for transport and termination of traffic -

(A) In general - For the purposes of compliance by an incumbent local exchange carrier with section 251(b)(5) of this title, a State commission shall not consider the terms and conditions for reciprocal compensation to be just and reasonable unless--

(i) such terms and conditions provide for the mutual and reciprocal recovery by each carrier of costs associated with the transport and termination on each carrier's network facilities of calls that originate on the network facilities of the other carrier; and

(ii) such terms and conditions determine such costs on the basis of a reasonable approximation of the additional costs of terminating such calls.

(B) Rules of construction - This paragraph shall not be construed--

(i) to preclude arrangements that afford the mutual recovery of costs through the offsetting of reciprocal obligations, including arrangements that waive mutual recovery (such as bill-and-keep arrangements); or

(ii) to authorize the Commission or any State commission to engage in any rate regulation proceeding

to establish with particularity the additional costs of transporting or terminating calls, or to require carriers to maintain records with respect to the additional costs of such calls.

(3) Wholesale prices for telecommunications services For the purposes of section 251(c)(4) of this title, a State commission shall determine wholesale rates on the basis of retail rates charges to subscribers for the telecommunications service requested, excluding the portion thereof attributable to any marketing, billing, collection, and other costs that will be avoided by the local exchange carrier.

(e) Approval by State commission -

(1) Approval required - Any interconnection agreement adopted by negotiation or arbitration shall be submitted for approval to the State commission. A State commission to which an agreement is submitted shall approve or reject the agreement, with written findings as to any deficiencies.

(2) Grounds for rejection - The State commission may only reject -

(A) an agreement (or any portion thereof) adopted by negotiation under subsection (a) of this section if it finds that--

(i) the agreement (or portion thereof) discriminates against a telecommunications carrier not a party to the agreement; or

(ii) the implementation of such agreement or portion is not consistent with the public interest, convenience, and necessity; or

(B) an agreement (or any portion thereof) adopted by arbitration under subsection (b) of this section if it

finds that the agreement does not meet the requirements of section 251 of this title, including the regulations prescribed by the Commission pursuant to section 251 of this title, or the standards set forth in subsection (d) of this section.

(3) Preservation of authority - Notwithstanding paragraph (2), but subject to section 253 of this title, nothing in this section shall prohibit a State commission from establishing or enforcing other requirements of State law in its review of an agreement, including requiring compliance with intrastate telecommunications service quality standards or requirements.

(4) Schedule for decision - If the State commission does not act to approve or reject the agreement within 90 days after submission by the parties of an agreement adopted by negotiation under subsection (a) of this section, or within 30 days after submission by the parties of an agreement adopted by arbitration under subsection (b) of this section, the agreement shall be deemed approved. No State court shall have jurisdiction to review the action of a State commission in approving or rejecting an agreement under this section.

(5) Commission to act if State will not act - If a State commission fails to act to carry out its responsibility under this section in any proceeding or other matter under this section, then the Commission shall issue an order preempting the State commission's jurisdiction of that proceeding or matter within 90 days after being notified (or taking notice) of such failure, and shall assume the responsibility of the State commission under this section with respect to the proceeding or matter and act for the State commission.

(6) Review of State commission actions - In a case in which a State fails to act as described in paragraph (5), the

proceeding by the Commission under such paragraph and any judicial review of the Commission's actions shall be the exclusive remedies for a State commission's failure to act. In any case in which a State commission makes a determination under this section, any party aggrieved by such determination may bring an action in an appropriate Federal district court to determine whether the agreement or statement meets the requirements of section 251 of this title and this section.

(f) Statements of generally available terms -

(1) In general - A Bell operating company may prepare and file with a State commission a statement of the terms and conditions that such company generally offers within that State to comply with the requirements of section 251 of this title and the regulations thereunder and the standards applicable under this section.

(2) State commission review - A State commission may not approve such statement unless such statement complies with subsection (d) of this section and section 251 of this title and the regulations thereunder. Except as provided in section 253 of this title, nothing in this section shall prohibit a State commission from establishing or enforcing other requirements of State law in its review of such statement, including requiring compliance with intrastate telecommunications service quality standards or requirements.

(3) Schedule for review - The State commission to which a statement is submitted shall, not later than 60 days after the date of such submission--

(A) complete the review of such statement under paragraph (2) (including any reconsideration thereof), unless the

submitting carrier agrees to an extension of the period for such review; or

(B) permit such statement to take effect.

(4) Authority to continue review - Paragraph (3) shall not preclude the State commission from continuing to review a statement that has been permitted to take effect under subparagraph (B) of such paragraph or from approving or disapproving such statement under paragraph (2).

(5) Duty to negotiate not affected - The submission or approval of a statement under this subsection shall not relieve a Bell operating company of its duty to negotiate the terms and conditions of an agreement under section 251 of this title.

(g) Consolidation of State proceedings - Where not inconsistent with the requirements of this chapter, a State commission may, to the extent practical, consolidate proceedings under sections 214(e), 251(f), and 253 of this title, and this section in order to reduce administrative burdens on telecommunications carriers, other parties to the proceedings, and the State commission in carrying out its responsibilities under this chapter.

(h) Filing required - A State commission shall make a copy of each agreement approved under subsection (e) of this section and each statement approved under subsection (f) of this section available for public inspection and copying within 10 days after the agreement or statement is approved. The State commission may charge a reasonable and nondiscriminatory fee to the parties to the agreement or to the party filing the statement to cover the costs of approving and filing such agreement or statement.

(i) Availability to other telecommunications carriers - A local exchange carrier shall make available any interconnection, service, or network element provided under an agreement approved under this section to which it is a party to any other requesting telecommunications carrier upon the same terms and conditions as those provided in the agreement.

(j) Definition of incumbent local exchange carrier - For purposes of this section, the term "incumbent local exchange carrier" has the meaning provided in section 251(h) of this title.

47 U.S.C. § 254

§ 254. Universal Service

(a) Procedures to review universal service requirements -

(1) Federal-State Joint Board on universal service - Within one month after February 8, 1996, the Commission shall institute and refer to a Federal-State Joint Board under section 410(c) of this title a proceeding to recommend changes to any of its regulations in order to implement sections 214(e) of this title and this section, including the definition of the services that are supported by Federal universal service support mechanisms and a specific timetable for completion of such recommendations. In addition to the members of the Joint Board required under section 410(c) of this title, one member of such Joint Board shall be a State-appointed utility consumer advocate nominated by a national organization of State utility consumer advocates. The Joint Board shall, after notice and opportunity for public comment, make its recommendations to the Commission 9 months after February 8, 1996.

(2) Commission action - The Commission shall initiate a single proceeding to implement the recommendations from the Joint Board required by paragraph (1) and shall complete such proceeding within 15 months after February 8, 1996. The rules established by such proceeding shall include a definition of the services that are supported by Federal universal service support mechanisms and a specific timetable for implementation. Thereafter, the Commission shall complete any proceeding to implement subsequent recommendations from any Joint Board on universal service within one year after receiving such recommendations.

(b) Universal service principles - The Joint Board and the Commission shall base policies for the preservation and advancement of universal service on the following principles:

(1) Quality and rates - Quality services should be available at just, reasonable, and affordable rates.

(2) Access to advanced services - Access to advanced telecommunications and information services should be provided in all regions of the Nation.

(3) Access in rural and high cost areas - Consumers in all regions of the Nation, including low-income consumers and those in rural, insular, and high cost areas, should have access to telecommunications and information services, including interexchange services and advanced telecommunications and information services, that are reasonably comparable to those services provided in urban areas and that are available at rates that are reasonably comparable to rates charged for similar services in urban areas.

(4) Equitable and nondiscriminatory contributions - All providers of telecommunications services should make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service.

(5) Specific and predictable support mechanisms - There should be specific, predictable and sufficient Federal and State mechanisms to preserve and advance universal service.

(6) Access to advanced telecommunications services for schools, health care, and libraries - Elementary and secondary schools and classrooms, health care providers, and libraries

should have access to advanced telecommunications services as described in subsection (h) of this section.

(7) Additional principles - Such other principles as the Joint Board and the Commission determine are necessary and appropriate for the protection of the public interest, convenience, and necessity and are consistent with this chapter.

(c) Definition

(1) In general - Universal service is an evolving level of telecommunications services that the Commission shall establish periodically under this section, taking into account advances in telecommunications and information technologies and services. The Joint Board in recommending, and the Commission in establishing, the definition of the services that are supported by Federal universal service support mechanisms shall consider the extent to which such telecommunications services--

(A) are essential to education, public health, or public safety;

(B) have, through the operation of market choices by customers, been subscribed to by a substantial majority of residential customers;

(C) are being deployed in public telecommunications networks by telecommunications carriers; and

(D) are consistent with the public interest, convenience, and necessity.

(2) Alterations and modifications - The Joint Board may, from time to time, recommend to the Commission

modifications in the definition of the services that are supported by Federal universal service support mechanisms.

(3) Special services - In addition to the services included in the definition of universal service under paragraph (1), the Commission may designate additional services for such support mechanisms for schools, libraries, and health care providers for the purposes of subsection (h) of this section.

(d) Telecommunications carrier contribution - Every telecommunications carrier that provides interstate telecommunications services shall contribute, on an equitable and nondiscriminatory basis, to the specific, predictable, and sufficient mechanisms established by the Commission to preserve and advance universal service. The Commission may exempt a carrier or class of carriers from this requirement if the carrier's telecommunications activities are limited to such an extent that the level of such carrier's contribution to the preservation and advancement of universal service would be de minimis. Any other provider of interstate telecommunications may be required to contribute to the preservation and advancement of universal service if the public interest so requires.

(e) Universal service support - After the date on which Commission regulations implementing this section take effect, only an eligible telecommunications carrier designated under section 214(e) of this title shall be eligible to receive specific Federal universal service support. A carrier that receives such support shall use that support only for the provision, maintenance, and upgrading of facilities and services for which the support is intended. Any such support should be explicit and sufficient to achieve the purposes of this section.

(f) State authority - A State may adopt regulations not

inconsistent with the Commission's rules to preserve and advance universal service. Every telecommunications carrier that provides intrastate telecommunications services shall contribute, on an equitable and nondiscriminatory basis, in a manner determined by the State to the preservation and advancement of universal service in that State. A State may adopt regulations to provide for additional definitions and standards to preserve and advance universal service within that State only to the extent that such regulations adopt additional specific, predictable, and sufficient mechanisms to support such definitions or standards that do not rely on or burden Federal universal service support mechanisms.

(g) Interexchange and interstate services - Within 6 months after February 8, 1996, the Commission shall adopt rules to require that the rates charged by providers of interexchange telecommunications services to subscribers in rural and high cost areas shall be no higher than the rates charged by each such provider to its subscribers in urban areas. Such rules shall also require that a provider of interstate interexchange telecommunications services shall provide such services to its subscribers in each State at rates no higher than the rates charged to its subscribers in any other State.

(h) Telecommunications services for certain providers -

(1) In general -

(A) Health care providers for rural areas - A telecommunications carrier shall, upon receiving a bona fide request, provide telecommunications services which are necessary for the provision of health care services in a State, including instruction relating to such services, to any public or nonprofit health care provider that serves persons who reside in rural areas in that State at rates that are reasonably comparable

to rates charged for similar services in urban areas in that State. A telecommunications carrier providing service under this paragraph shall be entitled to have an amount equal to the difference, if any, between the rates for services provided to health care providers for rural areas in a State and the rates for similar services provided to other customers in comparable rural areas in that State treated as a service obligation as a part of its obligation to participate in the mechanisms to preserve and advance universal service.

(B) Educational providers and libraries - All telecommunications carriers serving a geographic area shall, upon a bona fide request for any of its services that are within the definition of universal service under subsection (c)(3) of this section, provide such services to elementary schools, secondary schools, and libraries for educational purposes at rates less than the amounts charged for similar services to other parties. The discount shall be an amount that the Commission, with respect to interstate services, and the States, with respect to intrastate services, determine is appropriate and necessary to ensure affordable access to and use of such services by such entities. A telecommunications carrier providing service under this paragraph shall--

(i) have an amount equal to the amount of the discount treated as an offset to its obligation to contribute to the mechanisms to preserve and advance universal service, or

(ii) notwithstanding the provisions of subsection (e) of this section, receive reimbursement utilizing the support mechanisms to preserve and advance universal service.

(2) Advanced services - The Commission shall establish competitively neutral rules--

(A) to enhance, to the extent technically feasible and economically reasonable, access to advanced telecommunications and information services for all public and nonprofit elementary and secondary school classrooms, health care providers, and libraries; and

(B) to define the circumstances under which a telecommunications carrier may be required to connect its network to such public institutional telecommunications users.

(3) Terms and conditions - Telecommunications services and network capacity provided to a public institutional telecommunications user under this subsection may not be sold, resold, or otherwise transferred by such user in consideration for money or any other thing of value.

(4) Eligibility of users - No entity listed in this subsection shall be entitled to preferential rates or treatment as required by this subsection, if such entity operates as a for-profit business, is a school described in paragraph (7)(A) with an endowment of more than $50,000,000, or is a library or library consortium not eligible for assistance from a State library administrative agency under the Library Services and Technology Act [20 U.S.C.A. §§ 9121 et seq.].

(5) Requirements for certain schools with computers having internet access -

(A) Internet safety -

(i) In general - Except as provided in clause (ii), an elementary or secondary school having computers with Internet access may not receive services at discount rates under paragraph (1)(B) unless the school, school board, local educational agency, or other authority with responsibility for administration of the school--

(I) submits to the Commission the certifications described in subparagraphs (B) and (C);

(II) submits to the Commission a certification that an Internet safety policy has been adopted and implemented for the school under subsection (l); and

(III) ensures the use of such computers in accordance with the certifications.

(ii) Applicability - The prohibition in clause (i) shall not apply with respect to a school that receives services at discount rates under paragraph (1)(B) only for purposes other than the provision of Internet access, Internet service, or internal connections.

(iii) Public notice; hearing - An elementary or secondary school described in clause (i), or the school board, local educational agency, or other authority with responsibility for administration of the school, shall provide reasonable public notice and hold at least one public hearing or meeting to address the proposed Internet safety policy. In the case of an elementary or secondary school other than an elementary or secondary school as defined in section 8801 of Title 20, the notice and hearing required by this clause may be limited to those members of the public with a relationship to the school.

(B) Certification with respect to minors - A certification under this subparagraph is a certification that the school, school board, local educational agency, or other authority with responsibility for administration of the school-

(i) is enforcing a policy of Internet safety for minors that includes monitoring the online activities of minors and the operation of a technology protection measure with respect to any of its computers with Internet access that protects against access through such computers to visual depictions that are--

(I) obscene;

(II) child pornography; or

(III) harmful to minors; and

(ii) is enforcing the operation of such technology protection measure during any use of such computers by minors.

(C) Certification with respect to adults - A certification under this paragraph is a certification that the school, school board, local educational agency, or other authority with responsibility for administration of the school-

(i) is enforcing a policy of Internet safety that includes the operation of a technology protection measure with respect to any of its computers with Internet access that protects against access through such computers to visual depictions that are--

(I) obscene; or

(II) child pornography; and

(ii) is enforcing the operation of such technology protection measure during any use of such computers.

(D) Disabling during adult use - An administrator, supervisor, or other person authorized by the certifying authority under subparagraph (A)(i) may disable the technology protection measure concerned, during use by an adult, to enable access for bona fide research or other lawful purpose.

(E) Timing of implementation -

(i) In general - Subject to clause (ii) in the case of any school covered by this paragraph as of the effective date of this paragraph under section 1721(h) of the Children's Internet Protection Act, the certification under subparagraphs (B) and (C) shall be made--

(I) with respect to the first program funding year under this subsection following such

effective date, not later than 120 days after the beginning of such program funding year; and

(II) with respect to any subsequent program funding year, as part of the application process for such program funding year.

(ii) Process -

(I) Schools with internet safety policy and technology protection measures in place - A school covered by clause (i) that has in place an Internet safety policy and technology protection measures meeting the requirements necessary for certification under subparagraphs (B) and (C) shall certify its compliance with subparagraphs (B) and (C) during each annual program application cycle under this subsection, execpt that with respect to the first program funding year after the effective date of this paragraph under section 1721(h) of the Children's Internet Protection Act, the certifications shall be made not later than 120 days after the beginning of such first program funding year.

(II) Schools without internet safety policy and technology protection measures in place - A school covered by clause (i) that does not have in place an Internet safety policy and technology protection measures meeting the requirements necessary for certification under subparagraphs (B) and (C)--

(aa) for the first program year after the effective date of this subsection in which it is applying for funds under this subsection, shall certify that it is undertaking such actions, including any necessary procurement procedures, to put in place an Internet safety policy and technology protection measures meeting the requirements necessary for certification under subparagraphs (B) and (C); and

(bb) for the second program year after the effective date of this subsection in which

it is applying for funds under this subsection, shall certify that it is in compliance with subparagraphs (B) and (C).

Any school that is unable to certify compliance with such requirements in such second program year shall be ineligible for services at discount rates or funding in lieu of services at such rates under this subsection for such second year and all subsequent program years under this subsection, until such time as such school comes into compliance with this paragraph.

(III) Waivers - Any school subject to subclause (II) that cannot come into compliance with subparagraphs (B) and (C) in such second year program may seek a waiver of subclause (II)(bb) if State or local procurement rules or regulations or competitive bidding requirements prevent the making of the certification otherwise required by such subclause. A school, school board, local educational agency, or other authority with responsibility for administration of the school shall notify the Commission of the applicability of such subclause to the school. Such notice shall certify that the school in question will be brought into compliance before the start of the third program year after the effective date of this subsection in which the school is applying for funds under this subsection.

(F) Noncompliance -

(i) Failure to submit certification - Any school that knowingly fails to comply with the application guidelines regarding the annual submission of certification required by this paragraph shall not be eligible for services at discount rates or funding in lieu of services at such rates under this subsection.

(ii) Failure to comply with certification - Any school that knowingly fails to ensure the use of its computers in accordance with a certification under

subparagraphs (B) and (C) shall reimburse any funds and discounts received under this subsection for the period covered by such certification.

(iii) Remedy of noncompliance -

(I) Failure to submit - A school that has failed to submit a certification under clause (i) may remedy the failure by submitting the certification to which the failure relates. Upon submittal of such certification, the school shall be eligible for services at discount rates under this subsection.

(II) Failure to comply - A school that has failed to comply with a certification as described in clause (ii) may remedy the failure by ensuring the use of its computers in accordance with such certification. Upon submittal to the Commission of a certification or other appropriate evidence of such remedy, the school shall be eligible for services at discount rates under this subsection.

(6) Requirements for certain libraries with computers having internet access -

(A) Internet safety -

(i) In general - Except as provided in clause (ii), a library having one or more computers with Internet access may not receive services at discount rates under paragraph (1)(B) unless the library--

(I) submits to the Commission the certifications described in subparagraphs (B) and (C); and

(II) submits to the Commission a certification that an Internet safety policy has been adopted and implemented for the library under subsection (l); and

(III) ensures the use of such computers in accordance with the certifications.

(ii) Applicability - The prohibition in clause (i) shall not apply with respect to a library that receives

services at discount rates under paragraph (1)(B) only for purposes other than the provision of Internet access, Internet service, or internal connections.

(iii) Public notice; hearing - A library described in clause (i) shall provide reasonable public notice and hold at least one public hearing or meeting to address the proposed Internet safety policy.

(B) Certification with respect to minors - A certification under this subparagraph is a certification that the library--

(i) is enforcing a policy of Internet safety that includes the operation of a technology protection measure with respect to any of its computers with Internet access that protects against access through such computers to visual depictions that are--

(I) obscene;

(II) child pornography; or

(III) harmful to minors; and

(ii) is enforcing the operation of such technology protection measure during any use of such computers by minors.

(C) Certification with respect to adults - A certification under this paragraph is a certification that the library--

(i) is enforcing a policy of Internet safety that includes the operation of a technology protection measure with respect to any of its computers with Internet access that protects against access through such computers to visual depictions that are--

(I) obscene; or

(II) child pornography; and

(ii) is enforcing the operation of such technology protection measure during any use of such computers.

(D) Disabling during adult use - An administrator, supervisor, or other person authorized by the certifying authority under subparagraph (A)(i) may disable the technology protection measure concerned, during use by an adult, to enable access for bona fide research or other lawful purpose.

(E) Timing of implementation -

(i) In general - Subject to clause (ii) in the case of any library covered by this paragraph as of the effective date of this paragraph under section 1721(h) of the Children's Internet Protection Act, the certification under subparagraphs (B) and (C) shall be made--

(I) with respect to the first program funding year under this subsection following such effective date, not later than 120 days after the beginning of such program funding year; and

(II) with respect to any subsequent program funding year, as part of the application process for such program funding year.

(ii) Process -

(I) Libraries with Internet safety policy and technology protection measures in place - A library covered by clause (i) that has in place an Internet safety policy and technology protection measures meeting the requirements necessary for certification under subparagraphs (B) and (C) shall certify its compliance with subparagraphs (B) and (C) during each annual program application cycle under this subsection, except that with respect to the first program funding year after the effective date of this paragraph under section 1721(h) of the Children's Internet Protection Act, the certifications shall be made not later than 120 days after the beginning of such first program funding year.

(II) Libraries without internet safety policy and technology protection measures in place - A

library covered by clause (i) that does not have in place an Internet safety policy and technology protection measures meeting the requirements necessary for certification under subparagraphs (B) and (C)--

(aa) for the first program year after the effective date of this subsection in which it is applying for funds under this subsection, shall certify that it is undertaking such actions, including any necessary procurement procedures, to put in place an Internet safety policy and technology protection measures meeting the requirements necessary for certification under subparagraphs (B) and (C); and

(bb) for the second program year after the effective date of this subsection in which it is applying for funds under this subsection, shall certify that it is in compliance with subparagraphs (B) and (C). Any library that is unable to certify compliance with such requirements in such second program year shall be ineligible for services at discount rates or funding in lieu of services at such rates under this subsection for such second year and all subsequent program years under this subsection, until such time as such library comes into compliance with this paragraph.

(III) Waivers - Any library subject to subclause (II) that cannot come into compliance with subparagraphs (B) and (C) in such second year may seek a waiver of subclause (II)(bb) if State or local procurement rules or regulations or competitive bidding requirements prevent the making of the certification otherwise required by such subclause. A library, library board, or other authority with responsibility for administration of the library shall notify the Commission of the applicability of such subclause to the library. Such notice shall certify that the library in question will be brought into compliance before the start of the third program year after the effective date of this subsection in which the library is applying for funds under this subsection.

(F) Noncompliance -

(i) Failure to submit certification - Any library that knowingly fails to comply with the application guidelines regarding the annual submission of certification required by this paragraph shall not be eligible for services at discount rates or funding in lieu of services at such rates under this subsection.

(ii) Failure to comply with certification - Any library that knowingly fails to ensure the use of its computers in accordance with a certification under subparagraphs (B) and (C) shall reimburse all funds and discounts received under this subsection for the period covered by such certification.

(iii) Remedy of noncompliance -

(I) Failure to submit - A library that has failed to submit a certification under clause (i) may remedy the failure by submitting the certification to which the failure relates. Upon submittal of such certification, the library shall be eligible for services at discount rates under this subsection.

(II) Failure to comply - A library that has failed to comply with a certification as described in clause (ii) may remedy the failure by ensuring the use of its computers in accordance with such certification. Upon submittal to the Commission of a certification or other appropriate evidence of such remedy, the library shall be eligible for services at discount rates under this subsection.

(7) Definitions - For purposes of this subsection:

(A) Elementary and secondary schools - The term "elementary and secondary schools" means elementary schools and secondary schools, as defined in paragraphs (14) and (25), respectively, of section 8801 of Title 20.

(B) Health care provider - The term "health care provider" means--

(i) post-secondary educational institutions offering health care instruction, teaching hospitals, and medical schools;

(ii) community health centers or health centers providing health care to migrants;

(iii) local health departments or agencies;

(iv) community mental health centers;

(v) not-for-profit hospitals;

(vi) rural health clinics; and

(vii) consortia of health care providers consisting of one or more entities described in clauses (i) through (vi).

(C) Public institutional telecommunications user - The term "public institutional telecommunications user" means an elementary or secondary school, a library, or a health care provider as those terms are defined in this paragraph.

(D) Minor - The term "minor" means any individual who has not attained the age of 17 years.

(E) Obscene - The term "obscene" has the meaning given such term in section 1460 of Title 18.

(F) Child pornography - The term "child pornography" has the meaning given such term in section 2256 of Title 18.

(G) Harmful to minors - The term "harmful to minors" means any picture, image, graphic image file, or other visual depiction that--

(i) taken as a whole and with respect to minors, appeals to a prurient interest in nudity, sex, or excretion;

(ii) depicts, describes, or represents, in a patently offensive way with respect to what is suitable for minors, an actual or simulated sexual act or sexual contact,

actual or simulated normal or perverted sexual acts, or a lewd exhibition of the genitals; and

(iii) taken as a whole, lacks serious literary, artistic, political, or scientific value as to minors.

(H) Sexual act; sexual contact - The terms "sexual act" and "sexual contact" have the meanings given such terms in section 2246 of Title 18.

(I) Technology protection measure - The term "technology protection measure" means a specific technology that blocks or filters Internet access to the material covered by a certification under paragraph (5) or (6) to which such certification relates.

(i) Consumer protection - The Commission and the States should ensure that universal service is available at rates that are just, reasonable, and affordable.

(j) Lifeline assistance - Nothing in this section shall affect the collection, distribution, or administration of the Lifeline Assistance Program provided for by the Commission under regulations set forth in section 69.117 of title 47, Code of Federal Regulations, and other related sections of such title.

(k) Subsidy of competitive services prohibited - A telecommunications carrier may not use services that are not competitive to subsidize services that are subject to competition. The Commission, with respect to interstate services, and the States, with respect to intrastate services, shall establish any necessary cost allocation rules, accounting safeguards, and guidelines to ensure that services included in the definition of universal service bear no more than a reasonable share of the joint and common costs of facilities used to provide those services.

(l) Internet safety policy requirement for schools and libraries

(1) In general - In carrying out its responsibilities under subsection (h), each school or library to which subsection (h) applies shall--

(A) adopt and implement an Internet safety policy that addresses--

(i) access by minors to inappropriate matter on the Internet and World Wide Web;

(ii) the safety and security of minors when using electronic mail, chat rooms, and other forms of direct electronic communications;

(iii) unauthorized access, including so-called "hacking", and other unlawful activities by minors online;

(iv) unauthorized disclosure, use, and dissemination of personal identification information regarding minors; and

(v) measures designed to restrict minors' access to materials harmful to minors; and

(B) provide reasonable public notice and hold at least one public hearing or meeting to address the proposed Internet safety policy.

(2) Local determination of content - A determination regarding what matter is inappropriate for minors shall be made by the school board, local educational agency, library, or other authority responsible for making the determination. No agency or instrumentality of the United States Government may--

(A) establish criteria for making such determination;

(B) review the determination made by the certifying school, school board, local educational agency, library, or other authority; or

(C) consider the criteria employed by the certifying school, school board, local educational agency, library, or other authority in the administration of subsection (h)(1)(B).

(3) Availability for review- Each Internet safety policy adopted under this subsection shall be made available to the Commission, upon request of the Commission, by the school, school board, local educational agency, library, or other authority responsible for adopting such Internet safety policy for purposes of the review of such Internet safety policy by the Commission.

(4) Effective date - This subsection shall apply with respect to schools and libraries on or after the date that is 120 days after Dec. 21, 2000.

47 C.F.R. § 51.315

§ 51.315 Combination of unbundled network elements.

(a) An incumbent LEC shall provide unbundled network elements in a manner that allows requesting telecommunications carriers to combine such network elements in order to provide a telecommunications service.

(b) Except upon request, an incumbent LEC shall not separate requested network elements that the incumbent LEC currently combines.

(c) Upon request, an incumbent LEC shall perform the functions necessary to combine unbundled network elements in any manner, even if those elements are not ordinarily combined in the incumbent LEC's network, provided that such combination is:

(1) Technically feasible; and

(2) Would not impair the ability of other carriers to obtain access to unbundled network elements or to interconnect with the incumbent LEC's network.

(d) Upon request, an incumbent LEC shall perform the functions necessary to combine unbundled network elements with elements possessed by the requesting telecommunications carrier in any technically feasible manner.

(e) An incumbent LEC that denies a request to combine elements pursuant to paragraph (c)(1) or paragraph (d) of this section must prove to the state commission that the requested combination is not technically feasible.

(f) An incumbent LEC that denies a request to combine elements pursuant to paragraph (c)(2) of this section must prove to the state commission that the requested combination would impair the ability of other carriers to obtain access to unbundled network elements or to interconnect with the incumbent LEC's network.

* * *

47 C.F.R. §§ 51.501 - 51.511

§ 51.501 Scope.

(a) The rules in this subpart apply to the pricing of network elements, interconnection, and methods of obtaining access to unbundled elements, including physical collocation and virtual collocation.
(b) As used in this subpart, the term "element" includes network elements, interconnection, and methods of obtaining interconnection and access to unbundled elements.

§ 51.503 General pricing standard.

(a) An incumbent LEC shall offer elements to requesting telecommunications carriers at rates, terms, and conditions that are just, reasonable, and nondiscriminatory.
(b) An incumbent LEC's rates for each element it offers shall comply with the rate structure rules set forth in §§ 51.507 and 51.509, and shall be established, at the election of the state commission-

(1) Pursuant to the forward-looking economic cost-based pricing methodology set forth in §§ 51.505 and 51.511; or

(2) Consistent with the proxy ceilings and ranges set forth in § 51.513.

(c) The rates that an incumbent LEC assesses for elements shall not vary on the basis of the class of customers served by the requesting carrier, or on the type of services that the requesting carrier purchasing such elements uses them to provide.

§ 51.505 Forward-looking economic cost.

(a) In general. The forward-looking economic cost of an element equals the sum of:

(1) The total element long-run incremental cost of the element, as described in paragraph (b); and

(2) A reasonable allocation of forward-looking common costs, as described in paragraph (c).

(b) Total element long-run incremental cost. The total element long-run incremental cost of an element is the forward-looking cost over the long run of the total quantity of the facilities and functions that are directly attributable to, or reasonably identifiable as incremental to, such element, calculated taking as a given the incumbent LEC's provision of other elements.

(1) Efficient network configuration. The total element long-run incremental cost of an element should be measured based on the use of the most efficient telecommunications technology currently available and the lowest cost network configuration, given the existing location of the incumbent LEC's wire centers.

(2) Forward-looking cost of capital. The forward-looking cost of capital shall be used in calculating the total element long-run incremental cost of an element.

(3) Depreciation rates. The depreciation rates used in calculating forward-looking economic costs of elements shall be economic depreciation rates.

(c) Reasonable allocation of forward-looking common costs--

(1) Forward-looking common costs. Forward-looking common costs are economic costs efficiently incurred in providing a group of elements or services (which may include all elements or services provided by the incumbent LEC) that cannot be attributed directly to individual elements or services.

(2) Reasonable allocation.

(i) The sum of a reasonable allocation of forward-looking common costs and the total element long-run incremental cost of an element shall not exceed the stand-alone costs associated with the element. In this context, stand-alone costs are the total forward-looking costs, including corporate costs, that would be incurred to produce a given element if that element were provided by an efficient firm that produced nothing but the given element.

(ii) The sum of the allocation of forward-looking common costs for all elements and services shall equal the total forward-looking common costs, exclusive of retail costs, attributable to operating the incumbent LEC's total network, so as to provide all the elements and services offered.

(d) Factors that may not be considered. The following factors shall not be considered in a calculation of the forward- looking economic cost of an element:

(1) Embedded costs. Embedded costs are the costs that the incumbent LEC incurred in the past and that are recorded in the incumbent LEC's books of accounts;

(2) Retail costs. Retail costs include the costs of marketing, billing, collection, and other costs associated with offering retail telecommunications services to subscribers who are not telecommunications carriers, described in § 51.609;

(3) Opportunity costs. Opportunity costs include the revenues that the incumbent LEC would have received for the sale of telecommunications services, in the absence of competition from telecommunications carriers that purchase elements; and

(4) Revenues to subsidize other services. Revenues to subsidize other services include revenues associated with elements or telecommunications service offerings other than the element for which a rate is being established.

(e) Cost study requirements. An incumbent LEC must prove to the state commission that the rates for each element it offers do not exceed the forward- looking economic cost per unit of providing the element, using a cost study that complies with the methodology set forth in this section and § 51.511.

(1) A state commission may set a rate outside the proxy ranges or above the proxy ceilings described in § 51.513 only if that commission has given full and fair effect to the economic cost based pricing methodology described in this section and § 51.511 in a state proceeding that meets the requirements of paragraph (e)(2) of this section.

(2) Any state proceeding conducted pursuant to this section shall provide notice and an opportunity for comment to affected parties and shall result in the creation of a written factual record that is sufficient for purposes of review. The record of any state proceeding in which a state commission considers a cost study for purposes of establishing rates under this section shall include any such cost study.

§ 51.507 General rate structure standard.

(a) Element rates shall be structured consistently with the manner in which the costs of providing the elements are incurred.

(b) The costs of dedicated facilities shall be recovered through flat-rated charges.

(c) The costs of shared facilities shall be recovered in a manner that efficiently apportions costs among users. Costs of shared facilities may be apportioned either through usage-sensitive charges or capacity-based flat-rated charges, if the state commission finds that such rates reasonably reflect the costs imposed by the various users.

(d) Recurring costs shall be recovered through recurring charges, unless an incumbent LEC proves to a state commission

that such recurring costs are de minimis. Recurring costs shall be considered de minimis when the costs of administering the recurring charge would be excessive in relation to the amount of the recurring costs.

(e) State commissions may, where reasonable, require incumbent LECs to recover nonrecurring costs through recurring charges over a reasonable period of time. Nonrecurring charges shall be allocated efficiently among requesting telecommunications carriers, and shall not permit an incumbent LEC to recover more than the total forward-looking economic cost of providing the applicable element.

(f) State commissions shall establish different rates for elements in at least three defined geographic areas within the state to reflect geographic cost differences.

(1) To establish geographically-deaveraged rates, state commissions may use existing density-related zone pricing plans described in § 69.123 of this chapter, or other such cost-related zone plans established pursuant to state law.

(2) In states not using such existing plans, state commissions must create a minimum of three cost-related rate zones.

§ 51.509 Rate structure standards for specific elements.

In addition to the general rules set forth in § 51.507, rates for specific elements shall comply with the following rate structure rules.

(a) Local loops. Loop costs shall be recovered through flat-rated charges.

(b) Local switching. Local switching costs shall be recovered through a combination of a flat-rated charge for line ports and one or more flat-rated or per-minute usage charges for the switching matrix and for trunk ports.

(c) Dedicated transmission links. Dedicated transmission link costs shall be recovered through flat-rated charges.
(d) Shared transmission facilities between tandem switches and end offices. The costs of shared transmission facilities between tandem switches and end offices may be recovered through usage-sensitive charges, or in another manner consistent with the manner that the incumbent LEC incurs those costs.
(e) Tandem switching. Tandem switching costs may be recovered through usage-sensitive charges, or in another manner consistent with the manner that the incumbent LEC incurs those costs.
(f) Signaling and call-related database services. Signaling and call-related database service costs shall be usage-sensitive, based on either the number of queries or the number of messages, with the exception of the dedicated circuits known as signaling links, the cost of which shall be recovered through flat-rated charges.
(g) Collocation. Collocation costs shall be recovered consistent with the rate structure policies established in the Expanded Interconnection proceeding, CC Docket No. 91-141.

§ 51.511 Forward-looking economic cost per unit.

(a) The forward-looking economic cost per unit of an element equals the forward-looking economic cost of the element, as defined in § 51.505, divided by a reasonable projection of the sum of the total number of units of the element that the incumbent LEC is likely to provide to requesting telecommunications carriers and the total number of units of the element that the incumbent LEC is likely to use in offering its own services, during a reasonable measuring period.

(b)(1) With respect to elements that an incumbent LEC offers on a flat-rate basis, the number of units is defined as the

discrete number of elements (e.g., local loops or local switch ports) that the incumbent LEC uses or provides.

(2) With respect to elements that an incumbent LEC offers on a usage-sensitive basis, the number of units is defined as the unit of measurement of the usage (e.g., minutes of use or call-related database queries) of the element.

INITIAL COMMENTS OF THE ARIZONA CORPORATION COMMISSION

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Finally, the Commission should be aware of the Arizona Commission's continuing commitment to the process of conducting an orderly transition towards a pro-competitive environment in the telecommunications industry in Arizona. The latest direct Arizona Commission initiative in this direction involves the activities surrounding adoption of proposed rules relating to Interconnection and Unbundling. On January 11, 1996, the Arizona Commission issued Decision [*12*] No. 59483, which approved and set for public hearing a Notice of Proposed Rulemaking relating to Telecommunications Interconnection and Unbundling (the Interconnection Rules). It is anticipated that the proposed rules will be adopted by the Arizona Commission on or before June 30, 1996. A copy of the Arizona Commission's proposed rules on Telecommunications Interconnection and Unbundling is attached to these Comments as Exhibit V. It is anticipated that the rules will be codified as A.A.C. R14-2-1301 et. seq., and they are so identified in the attached Exhibit. The Interconnection rules will govern interconnection requirements as provided in connection wih the Arizona Commission's general competition rules. The Interconnection Rules plainly fall within the ambit of § 251(d)(3) of the 1996 Act and are subject to preservation thereunder.

AFFIDAVIT OF WILLIAM J. BAUMOL, JANUSZ A. ORDOVER, AND ROBERT D. WILLIG

1. Our names are William J. Baumol, Janusz A. Ordover, and Robert D. Willig. William J. Baumol is Director of the C.V. Starr Center for Applied Economics at New York University and Professor Emeritus at Princeton University. His *curriculum vitae* appears as Attachment A. Janusz A. Ordover is Professor of Economics at New York University. His *curriculum vitae* appears as Attachment B. Robert D. Willig is Professor of Economics and Public Affairs at Princeton University. His *curriculum vitae* appears as Attachment C.

2. We submit this affidavit in response to the Commission's April 19, 1996 Notice of Proposed Rulemaking in CC Docket No. 96-98, *Implementation of the Local Competition Provisions in the Telecommunications Act of 1996.* The Commission has proposed in its Notice to require ILECS (1) to offer unbundled network elements and interconnection services for sale to competitive local exchange carriers ("CLECS"), to the fullest practical extent, individually and in flexibly defined groups; (2) to price those network elements (as well as related interconnection and collocation) at competitive prices based on the economic costs of providing the network elements; and (3) to sell bundled services at wholesale to other carriers for resale. We applaud all three proposals.

3. Our focus in this affidavit is on the pricing of network elements. Adoption of economically defensible standards for pricing unbundled network elements is perhaps the single most critical aspect of the Commission's proposals. As we explain below, consistent with the competitive pricing contemplated by the Act, a defensible pricing standard must be based on forward-looking economic costs, not historic book costs, because the expansion, contraction, entry and exit decisions of competitors efficiently and necessarily turn on

expected prices and costs having nothing to do with costs expended historically or reflected on accounting books. [*2*] In the circumstances presented here, we conclude that the appropriate forward-looking benchmark for pricing is total service long run incremental cost, or TSLRIC. We further conclude that a cost model developed by Hatfield Associates, Inc. provides good empirical estimates of the TSLRIC of basic network elements.

4. Passage of the 1996 Telecommunications Act offers an invaluable opportunity to extend the benefits of competition to users of every product and segment of the industry, especially the local exchange, where competition has been least extensive and effective. Availability of unbundled network elements for sale at prices based on economic costs will foster efficient and prompt competition at all levels -- from resale alone at one end of the spectrum, to fully facilities-based at the other, and through the broad middle range of partially-facilities based competition. All of these forms of competition can benefit end users, bringing new vitality, innovation, pressures for cost-efficiency, and superior customer service to the market. But the fundamental policy of the 1996 Act -- extending all forms of competition to the markets where it is now absent -- cannot be attained unless the pricing principles discussed here are carried out. Misguided allegiance to prior regulatory norms or departure from the logic of free and competitive markets would frustrate the central goals of the act.

I. THE PROPER MEASURE OF THE ECONOMIC COST OF UNBUNDLED NETWORK ELEMENTS IS TOTAL SERVICE LONG RUN INCREMENTAL COST ("TSLRIC").

A. Pricing of Network Elements Should Be Based on Economic Costs, Not Book Costs.

5. Where, as here, markets are ineffectively competitive and regulatory oversight is warranted, regulators should set prices that replicate, as closely as possible, the prices that would prevail in competitive markets. Under this competitice standard, prices accomplish several crucial goals for economic efficiency and consumer benefits. First, prices should steer [*3*] purchasers to the most efficient, least-cost suppliers of each good or service for which there is sufficient demand. Second, prices should guide purchasers to make efficient choices among *different* goods and services offered in the market. Third, prices should achieve the level of cost recovery that encourages efficient levels of investment, entry and exit. These criteria dictate that network elements be priced on the basis of economic costs, not book or embedded costs.

6. Economic costs are calculated from the standpoint of building production and service capability *today*, at current input prices, and in the fashion that is most cost effective in light of today's available technology, input prices, and expectations about demand. For services that are not in decline, and that are expected to show demand sufficient for new and replacement investment, economic costs are long-run costs that reflect forward-looking efficient investment, including a return on capital consistent with competitive capital markets.

7. Both efficiency and the competitive model dictate this result. In competitive markets, efficient decisions about market entry, exit, expansion, and contraction are made by

comparing the anticipated revenue with the anticipated incremental costs of the contemplated change in output. Historical expenditures, and amount reflected on accounting books, are irrelevant to this calculus.

8. The basing of network element prices on book accounting costs, by contrast, would create new ILEC opportunities for inefficiency. If the network element prices were based on book accounting costs, then excess ILEC spending would be rewarded with the opportunity to recover the inefficient cost through higher prices. This outcome would sustain and restore one of the worst features of traditional public utlity regulation.

9. Further, basing network element prices on book accounting costs would give ILECs new opportunities to engage in anticompetitive strategic conduct by misallocating and [*4*] mischaracterizing costs. Misallocating book costs would enable ILECs to overprice the network elements purchased by rival carriers, thereby weakening or eliminating the competitive pressures for improved efficiency and service quality that the Act was intended to promote. Any costs shifted by the ILECs from the competitive activities to more-protected activities would permit them to raise network element prices in the more protected domain, while escaping the need to recover those costs from the competitive activities. In this way, ILECs would have a strong incentive to price the more competitive end-user services in a predatory fashion in order to build spending opportunities.

10. Finally, disparities between economic costs and prices for network elements would result in disparities between economic cost and prices for end-user services that use those network elements as inputs. The result could be long-lasting inefficiencies in the allocation of resources to telecommunications and related sectors such as computing and information services. Such an outcome would be especially

costly to society today, when fundamental decisions about the deployment and use of technology are up for grabs in the marketplace.

B. The Pertinent Measure of Economic Cost For Pricing Network Elements Is Incremental Cost.

11. The Measure of cost on which efficient prices are based, and to which efficient prices converge in competitive markets, is *incremental* cost. Incremental cost represents the *additional* cost to society of producing a particular network element or service, rather than the most valuable alternative use or uses, if all other outputs of the ILEC are held constant.[1]

[*5*] 12. Use of incremental cost pricing will best approximate the performance of competitive markets. In the long run, prices in competitive markets converge to incremental cost. Firms decide whether to expand or enter new markets by

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[1] Another important measure of economic cost, closely related to incremental cost, is stand-alone cost, or SAC. SAC is the economic cost of producing a service (or network element) in isolation from other outputs. Intuition, and available forward-looking engineering cost studies, indicate that for a logical aggregation of network elements, SAC does not differ significantly from long run incremental cost because there are no significant common or shared costs among the groups of network elements. That is because those aggregative categories of network elements generally comprise discrete physical facilities-e.g., loop, switching, transport, and signalling. Thus, there is no practical ambiguity, at this level of aggregation, in speaking about economic costs, SAC, and incremental costs interchangeably. At a finer level of disaggregation, there may well be non-trivial costs shared among various subcomponents of any particular aggregative network element. The competitive price for any such subcomponent must lie between the subcomponent's unit long run incremental cost and SAC. The revenues from the competitive prices of all the subcomponents of an aggregative network element must sum to the long run incremental cost of the aggregative network element.

comparing the expected costs of expansion or entry with the expected incremental revenue. Likewise, firms decide whether to contract or exit by comparing the costs avoided with the expected revenues foregone.

13. Consistent with the logic of competitive markets, the pricing of network elements on the basis of incremental cost should encourage new or potential entrants in local exchange markets to make efficient make-or-buy decisions, supplying a network element through self-provision only when the entrant can do so at a lower incremental cost than the ILEC. Basing the pricing of network elements on incremental cost is also a prerequisite for efficient purchasing decisions by the *ultimate* consumers of telecommunications services. Consumers are encouraged to make optimal use of expenditures permitted by their budgets only when prices reflect the relative scarcity of each good or service available in the market.

C. The Proper Time Horizon For Determining the Incremental Costs Of Network Elements Is The Long Run.

14. The competitive market model also dictates that the costs for pricing of network elements be based upon a long-run time horizon-- i.e., a time horizon long enough that sunk costs are variable, and obsolete or inefficiently configured assets are replaced with efficiently [*6*] configured assets under current technology.[2] In competitive markets, entry decisions are based on long run costs, for all costs of entry are variable before the necessary investment is sunk. Accordingly, the threat of potential entry in competitive markets limits prices charged by

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[2] This conclusion presumes, of course, that demand for use of the network element is not declining so much that the network element is becoming obsolete.

incumbent firms to the long run costs faced by an efficient potential entrant.

D. The Pertinent Increment of Volume Is The Total Expected Demand For A Network Element Produced By An ILEC, Including Its Own Demand.

15. The relevant increment of output to be costed is the *total* demand of *all* uses and users of a network element (or group of network elements) sought by a requesting carrier, including the demand of the ILEC itself. Hence, the relevant measure of economic costs for unbundled network elements is the total service long run incremental cost, or TSLRIC.

16. Many network elements may be characterized by economies of scale. In competitive markets, capacity is sized to take appropriate advantage of those economies. Accordingly, basing the price of network elements on the incremental costs per unit of serving only a portion of total demand for a network element could inflate unit costs above efficient levels. It also would give an inefficient competitive advantage to ILECs, whose own needs for cost recovery are satisfied on the basis of the entire anticipated demand.

E. The Benefits Of Economic Pricing Can Occur Even Before The Emergence Of Facilities-Based Competition For Every Network Element.

17. The natural monopoly properties of some aspects of the local exchange market may create entry barriers that are strong enough to delay facilities-based competition for some network elements. The Commission's proposed rules will provide competitive benefits that are [*7*] significant and immediate, however, even before full facilities-based

competition develops in all segments of the local exchange markets.

18. In this regard, if competitive local exchange carriers ("CLECs") can secure the network elements they need from an ILEC at economic costs, then competition among the CLECs, and between the CLECs and the ILEC, predictably will drive end-user prices to competitive levels, and drive industry structures and costs to efficient levels. Indeed, requiring ILECs to offer network elements priced at TSLRIC-based rates (and also to offer complete local exchange services at wholesale prices to resellers) would serve the public interest even if facilities-based competition for every network element never materialized.

19. Further, requiring ILECs to sell unbundled network elements at prices based on TSLRIC will accelerate progress towards facilities-based competition by reducing economic barriers to facilities-based entry. Such unbundling and resale will enable entrants quickly to build relationships with end users based on marketing, customer service, and innovative modifications or additions to existing network elements, without incurring all of the risks inherent in making the enormous investments needed to build every element of an entire network simultaneously from scratch. The resulting commercial relationships with end users should in turn serve as a powerful springboard for integration backward through further facilities-based entry.[3]

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[3] Concerns have been raised that network elements priced at TSLRIC would be so cheap as to deter efficient facilities-based entry. These concerns are unfounded. TSLRIC is a measure of *incremental* cost, not *marginal* cost. It includes *all* of the additional costs that society incurs by asking the incumbent carrier to supply the output of a network element. If another carrier cannot produce that output as cheaply itself, then its

(continued...)

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F. TSLRIC Pricing Is Consistent With Properly Applied ECPR Principles.

20. The Commission has tentatively rejected proposals of certain ILECs to base the prices of interconnection or network elements on an application of the efficient component pricing rule ("ECPR") in a form supposedly advocated by us. Notice ¶¶ 147-148. The Commission's conclusion is proper, although for reasons that differ somewhat from those articulated in the Notice. In this regard, we continue to believe that principles of ECPR are valid and serve a usefule regulatory role. It is crucial, however, to understand the proper role of ECPR.

21. ECPR concerns the relationship between *appropriate* end-user prices and the correspondingly appropriate prices for inputs to end-user services, such as access to underlying facilities or, in today's language, for unbundled network elements. Under ECPR, a vertically integrated firm with market power over one or more components in the chain of production sets the price of an unbundled component at a level that does not exceed the sum of incremental costs and the contribution from the price of the end-user service that would be lost due to the sale of the component.

22. The existing structure of end-user prices for local telecommunications is *not* appropriate as a baseline for ECPR or any other pro-competitive purpose; it is utterly inconsistent with the competitive policies of the 1996 Act. Cross-subsidies are common in the rate structure, and rates depart systematically from pertinent costs. In these circumstances, the old structure

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[3] (...continued)
facilities-based entry wastes resources and should not occur.

of rates is the wrong baseline for the pricing of network elements through the application of ECPR.

23. Indeed, applying ECPR to the existing rate structure would result in component prices that lock in the ILECs' monopoly profits and inefficiencies, would attract inefficient entry [*9*] where rates are too high, and would preclude efficient entry where rates are too low. ECPR was never intended to (and cannot) substitute for competition for the monopoly network elements, or limit to fully competitive levels the prices paid by end users for services that use those network elements.

24. Of course, as unbundling proceeds and competition spreads as a result of economic-cost-based pricing of network elements, end-user prices should be driven toward incremental costs. With the *appropriate* end-user prices at incremental costs, the component prices dictated by ECPR are no higher than TSLRIC.

II. THE COMMISSION SHOULD PRESCRIBE BASIC PRINCIPLES FOR ESTIMATING TOTAL SERVICE LONG RUN INCREMENTAL COST.

25. Valid TSLRIC models should recognize the following basic principles:

(1) TSLRIC measures the *forward-looking* costs of providing the network element is question.

(2) TSLRIC is based on the costs an *efficient, cost-minimizing* competitor would incur -- *i.e.*, the costs of assets that are optimally configured and sized with current technology and efficient operating practices. Proper TSLRIC estimates do not simply accept the architecture, sizing, technology, or operating decisions of the ILECs as bases for calculating TSLRIC.

(3) TSLRIC includes only the *additional* costs of providing the particular network element(s) being costed, holding constant the ILEC's output of other goods and services.

(4) TSLRIC is based on the entire demand of *all* uses and users of that element or group.

(5) TSLRIC estimates should reflect significant geographic cost differences.

[*10*] 26. We discuss each of these critical principles in turn. We also emphasize the need to take care in allowing any "add-ons" for recovery of costs common to or shared among more than one network element (and therefore properly excluded from a network element TSLRIC estimate) to assure that quantification and allocation of such "common" costs is consistent with the competitive market model.

A. TSLRIC measures the *forward-looking* costs of providing the network element(s) in question.

27. As noted above, the most important principle is that TSLRIC measures current, prospective, or forward-looking costs, not historic, embedded, or book costs. Economic costs are forward-looking and are based on the most efficient generally available technology. Forward-looking costs provide the basis for competitive prices, define the thresholds for cross-subsidization, and govern expansion, contraction, entry, and exit decisions in competitive markets. Book costs are unlikely to reflect economic costs accurately, and basing the prices of network elements on book costs would be dangerously counterproductive.

B. TSLRIC is based on the costs an *efficient, cost-minimizing* competitor would incur -- i.e., the costs of assets that are optimally configured and sized with current technology and efficient operating practices. Proper TSLRIC estimates do not simply accept the architecture, sizing, technology, or operating decisions of the ILECs as bases for calculating TSLRIC.

28. Proper measures of the TSLRIC also must exclude the costs of inefficient design or operations. This principle follows from the competitive standard because excess costs cannot be recovered in competitive or contestable markets. New entry in such markets can occur at any time, instantly, and in sufficient scale to capture all the incumbent's volume. The threat of such entry disciplines incumbents and prevents them from charging more than the incremental costs of providing a service in the most efficient, least cost manner. Furthermore, pricing at levels just sufficient to recover the costs of an efficient supplier discourages new entry by inefficient, [*11*] higher-cost suppliers. In contrast, allowing ILECs to include costs attributable to inefficient design or operations in charges for network elements purchased by rivals would weaken incentives for ILECs to operate efficiently, encourage inefficient bypass of ILEC network elements by new entrants, discourage efficient entry by downstream users of those network elements, and inflate the end user prices for local exchange and other services above competitive levels.

29. This issue is significant because the RBOCs' network architecture, design, technology, and operations reflect years of operation under the traditional rate-of-return regulatory model, which created both incentives and opportunities for ILECs to operate inefficiently and manipulate their reported costs to recover the costs of inefficient design and operations.

For example, many ILEC facilities whose costs are carried in the ILECs' regulated rate bases appear to have been designed and sized to provide advanced or nonregulated services, now or in the future, and seem to exceed the efficient size and capabilities of facilities designed for regulated services alone. ILECs should *not* be allowed to include such added costs in the TSLRIC of network elements.

B. TSLRIC includes only the *additional* costs of providing the particular network element(s) sought by the requesting carrier, holding constant the ILEC's output of all other goods and services.

30. The third basic principle is one of causality: TSLRIC includes only those added costs that are attributable to production of the network element or elements. Costs that are properly attributable to *other* outputs of the ILEC, the capacity to produce other outputs in the future, or costs that would be incurred even if the network element or elements were not supplied, are properly excluded from TSLRIC.

[*12*] 31. Thus, the TSLRIC of a network element purchased by another carrier *excludes* costs that are attributable to (1) the ILEC's retailing operations (e.g., marketing, billing), (2) other network elements, or (3) capacity acquired in anticipation of future expansion into other activities (e.g., fiber acquired in anticipation of providing broadband video services or interexchange telecommunications services). Capacity to provide new or future services is not necessary to provide basic network elements, and an efficient provider of network elements would not incur those costs.[4]

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[4] We understand that the costs incurred in common between network elements and retail services are *de minimis*. Moreover, retail services are

(continued...)

C. TSLRIC Is Based on the Entire Demand of *All* Uses and Users of a Network Element or Group.

32. As noted above, TSLRIC includes the additional costs of serving the total demand of all uses and users of a network element (or group of network elements) sought by a requesting carrier, including the demand of the ILEC itself. Production of many network elements is characterized by economies of scale. Defining TSLRIC by reference to the incremental costs of only a portion of total demand for a network element can inflate unit costs above efficient levels and would injure consumers by giving ILECs an inefficient competitive advantage over potential competitors.[5]

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[4] (...continued)
provided at a separate, downstream stage of production, and the costs attributable to retail services should be recovered from retail customers. Inclusion of these separate costs in the measure of TSLRIC would give potential purchasers and end users misleading signals about the social opportunity costs of network elements offered by ILEC, and would result in cross-subsidy by the network elements.

[5] At the same time, there may be circumstances when a price *below* average TSLRIC is necessary to protect against competitive injury. For a new service provided by an ILEC with an existing network element, the marginal cost of the service to the ILEC may be less than the average incremental cost of the network element. Under those circumstances, TSLRIC pricing may be a barrier to efficient competitive entry. Protection against this outcome would be provided by an imputation rule which requires an ILEC to offer network elements to CLECs at prices not exceeding the imputed prices charged by the ILEC to itself for use of the network elements (with proper accounting for any retail subsidies).

[*13*] D. TSLRIC Estimates Should Reflect Significant Geographic Cost Differences.

33. TSLRIC estimates should reflect any significant geographic differences in cost. We understand, for example, that the costs of loop network elements may vary significantly by population density and topography. Ignoring these differences could give ILECs inefficient competitive advantages, particularly in high density urban areas where economies of density result in low per capita loop costs.

E. Recovery Of Carrier-to-Carrier Costs Are Not Casually Attributable To Any Single Network Element Should Be Consistent With The Competitive Market Model.

34. Some ILECs have argued that prices for network elements must be marked up *substantially* above TSLRIC to permit recovery of costs that are shared among multiple network elements. This claim is unwarranted.

35. We understand that the portion of forward-looking costs that is unattributable to particular network elements is likely to be small. The aggregative categories of network elements generally compromise discrete physical facilities – loop, switching, transport, and signalling. Economies of scope, or cost subadditivities, among these categories are likely to be minimal or nonexistent. To the extent that there are non-trivial common or shared costs among network elements, it is critical that the Commission establish strict limits on their recovery to avert arbitrary additives significantly above TSLRIC, which

could undermine the efficiencies and protection of competition offered by the TSLRIC benchmark.[6]

[*14*] 36. First, no recovery of unattributable costs should be allowed unless the ILEC shows that such costs must, in fact, be incurred (on a forward-looking, efficiency-maximizing basis) in common by or shared between the requested network element(s) and other network elements. Such a showing can be made by estimating the aggregate TSLRIC of all the outputs to which the unattributable costs are shared. In no circumstances should the Commission allow ILECs to satisfy this burden with data based on accounting allocations of embedded costs. Efficient costs are never measured by an ILEC's actual historical "overhead" expenditures.

37. Second, the difference between the TSLRIC of an aggregate of outputs, and the sum of the TSLRICs of each subset of those outputs, should be assigned to individual network elements on an efficient and competitively neutral basis. In particular, if the magnitude of the additional revenue to be recovered is too small to be of allocative or competitive significance, then a simple method of recovering the revenue through small markups applied to each network element could be justified by the litigation and other transaction costs avoided. Where the additional revenue is significantly large, the method

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[6] Current ILEC accounting systems often classify certain expenses (e.g., the president's salary) as "common" or "overhead" even though a large portion of the expenses may be variable with respect to the volume of business, and attributable to particular network elements. Regardless of the arbitrary accounting label, costs of this kind are properly included in the TSLRIC of the relevant network element.

of revenue recovery should be consistent with allocative and competitive efficiency.[7]

38. Third, the sum of the incremental costs attributed to a requested network element (or elements), and the common or shared costs allocated to those elements, should never be allowed to exceed the stand-alone costs ("SAC") or TSLRIC of supplying those elements in the [*15*] aggregate. As explained above, SAC is the economic cost of supplying an output in isolation from other outputs. Prices in perfectly contestable markets can never exceed SAC.

III. THE HATFIELD MODEL APPLIES PROPER STANDARDS FOR ESTIMATING TSLRIC.

39. We have reviewed the costing model constructed for AT&T and MCI by Hatfield Associates, Inc., a telecommunications firm. The object of the current Hatfield model is to estimate the total costs of building and operating a network, using efficient, forward-looking technology, to supply all "basic" narrowband services (essentially all local and intraLATA toll service, including carrier access) currently supplied in the United States. We conclude that the Hatfield Model follows reasonably closely the TSLRIC principles discussed in Section II. Where limitations on the availability of data have forced the designers of the model to use approximations that deviate from the theoretical ideal, the shortcuts adopted tend to overestimate, not underestimate, true TSLRIC. Further, the model is extremely flexible: whenever more specific or accurate values are available, they can readily be substituted for the values used currently.

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[7] In particular, an ILEC should not be allowed to charge other carriers a price for a network element that is higher than the imputed price charged by the ILEC to itself in the context of a competing offering.

A. The Hatfield model uses *forward-looking* costs, and estimates the costs of an *efficient, cost-minimizing* supplier.

40. The Hatfield model provides reasonable estimates of forward-looking, efficient costs. These first two of the TSLRIC tenets identified in Section II above - forward-looking and efficiency-maximizing – are, in our view, the critical elements of any legitimate TSLRIC study.

41. Our examination of the Hatfield Model investment calculations indicates that they entail a state-of-the-art data modeling approach in the construction of local loop, switching and transport, signalling, and operator services. In its assumptions, the model respects the requirement that the network (and associated functions) be configured in a manner that [*16*] minimizes the costs of providing narrowband, local exchange services, including access and interconnection. Hatfield's sizing of the network and selection of its architecture reflect all of the end-user and carrier-to-carrier demands that are put on the local network. We also understand that the model uses realistic fill factors.

42. The modular nature of the model permits TSLRIC estimates that satisfy the assumption that CLECs may provide some of the network functions using their own facilities. In other words, the assumed demands need not be the same for each network element but, instead, can be adjusted to reflect the effects of facilities-based entry.

43. The most sophisticated modeling of investment cost is that for costs associated with the local loop. This is appropriate, for we understand that investment in the local loop accounts for nearly half of the aggregate investment outlays captured by the model. The model also reflects the most efficient switching technology, and uses actual discounted prices rather than list prices for switching equipment.

44. Where the model falls short of the theoretical ideal, it tends to err in the direction of overestimation, not underestimation, of actual TSLRIC. First, since adequate data are not yet available to model a local exchange that is fully optimized in the locations of wire centers and tandem switches, the model assumes that the existing locations are optimal. If and when the modeling of optimal locations becomes feasible, those locations can readily be substituted as inputs for existing switch locations. Such an adjustment should reduce, not increase, the TSLRIC estimates produced by the current version of the model.

45. Further, the population is assumed to be uniformly distributed in the model. In actuality, ILECS are free to deploy their networks to take advantage of population variations, [*17*] siting wire centers in or near population concentrations where possible. Here again, we understand that the model errs on the side of conservatism.

46. The model estimates forward-looking non-investment expenses by scaling down certain operating expense data from existing ILECs by the same ratio of efficient, forward-looking investment costs to historic ILEC investment costs. This approach is intuitively plausible insofar as competition in equipment supply markets encourages advances that lower both initial investment and operating expenses.

B. The Hatfield mosel estimates only the *additional* costs of providing the particular network elements except where data limitations result in the inclusion of costs shared between two or more network elements.

47. Our review of the model confirms that its estimates are limited, where possible, to the economic costs of particular network elements. First, the model uses an engineering rather

than an accounting approach to cost estimation. Consequently, it does not need the arbitrary cost allocations that are inevitably associated with cost studies based on accounting of cost data.

48. Second, network elements whose costs are estimated by the model are defined at a level of sufficient aggregation to include most costs that would otherwise be shared between individual network services. As a result, the share of total costs not captured in the pertinent TSLRICs is likely to be small. This minimizes the need for potentially arbitrary judgments about the proper treatment of various cost components.

49. Finally, where the model deviates from efficient incremental costing, the deviations are likely to overestimate, not underestimate, the resulting cost values. For example, the costs of local or tandem switching are estimated on a stand - alone basis, without regard for the economies of scope associated with production of switching along with signalling.

[*18*]

C. The Hatfield model takes into account the entire demand of *all* uses and users of a network element or group of network elements.

50. The Hatfield model also deals with the entire demand for each network element, and the Hatfield unit cost estimates assume that switches, trunks, and other assets are sized to produce at least the level of current output. The resulting TSLRIC values should therefore reflect most of the potential economies of scale permitted by current demand levels.

D. The Hatfield model recognizes significant geographic cost differences.

51. Finally, the Hatfield model is slightly sensitive to variations in geography and population density. These differences can have potentially significant effects on estimated costs. Ignoring these divergences from average values can create incentives for inefficient entry, opportunities for anticompetitive cross-subsidies, and obstacles to full cost recovery for the ILECs. Our review of the Hatfield model indicates that the estimated TSLRICs are as free as possible from these distortions.

IV. ECONOMICALLY DEFENSIBLE PRINCIPLES OF RATE DESIGN ARE IMPORTANT.

52. We understand that the Commission has not limited its inquiry to appropriate principles for determining overall rate levels, but also proposes to adopt certain rate structuring principles. This is entirely proper and commendable, for even if rates are set at the right overall levels to recover true economic costs (as measured by appropriate TSLRIC modeling), inappropriate rate structures can impair competition, create inefficiencies, and harm consumers.

53. Most fundamentally, efficiency-maximizing network element rates should, to the extent reasonably possible, recover costs in a manner that reflects the way those costs are caused to be incurred. We understand, for example, that most or all of the costs are attributable to a number of the ILEC network elements proposed to be unbundled are driven by capacity, not [*19*] usage. The costs of such network elements, which when purchased by a CLEC are essentially dedicated to that CLEC's use and not shared by others, can be attributed directly to that CLEC. Capacity charges are

efficiency-maximizing in those circumstances.

54. Usage-sensitive charges, by contrast, could lead to inefficient outcomes at both ends of the usage spectrum when costs vary with capacity, not usage. First, because usage sensitive network element charges would exceed the true economic cost of serving high volume end users, such charges would encourage inefficient CLEC bypass of the ILEC network to serve those customers. At the same time, usage sensitive charges that did not reflect the true economic cost of serving low volume end users would encourage inefficient levels of CLEC purchases of the network elements in question.

55. Usage charges may be appropriate, however, when capacity costs cannot be readily attributed to particular CLECs or end users. An example is common transport. The conceptually correct cost driver is capacity, with its cost recovery apportioned among individual users or uses in manners sensitive to their share of the total demand during peak periods. We understand that accurately determining the relative responsibility for total demand during these periods may be currently infeasible, however. Here, usage charges may make economic sense.

V. PRIVATE NEGOTIATIONS ARE UNLIKELY TO ACHIEVE ECONOMICALLY DEFENSIBLE RATE LEVELS UNLESS THE COMMISSION PRESCRIBES THE BASIC PRINCIPLES FOR ECONOMIC COSTS.

56. The Commission has properly proposed to prescribe standards for determining TSLRIC, rather than leaving the pricing of network elements to unconstrained bargaining between ILECs and other carriers. Without a firm regulatory constraint, the ILECs' market power is likely to yield bargaining outcomes that are one-sided, anticompetitive, and

inefficient.

[*20*] 57. A regulatory model with predictable litigation outcomes will increase the likelihood of settlement. If an ILEC and an entrant seeking to purchase network elements both know that the alternative to voluntary agreement is arbitration or adjudication based on TSLRIC pricing principles, both parties will be motivated to negotiate in good faith to reach an individualized agreement. Arbitration or adjudication by a third-party, no matter how wise and well-informed, is inevitably based on incomplete information and thus is almost certain to be less accurately shaped by commercial reality than is fully optimal. Determination of prices through private agreement can make both sides better off, for it can adapt itself effectively to the commercial details on the basis of more complete information. The potential gains from private negotiations can be realized, however, only if the regulatory backstop excludes the possibility of one-sided monopolistic outcomes.

58. Analogous experience in the railroad industry underscores these propositions. Major amendments to the Interstate Commerce Act of 1976 and 1980 left the standards for railroad rate regulation in flux for a number of years. By 1981, the Interstate Commerce Commission faced a backlog of several hundred unresolved rate disputes between railroads and shippers. In late 1983, the ICC proposed to limit rates with constraints based on forward-looking economic costs. The proposed standards were adopted in final form in 1985, were applied in a number of individual rate adjudications in the mid- and late 1980s, and were endorsed by the railroad Accounting Principles Board in 1987. The new rate standards, while not costless to litigate, yielded generally predictable results. We understand that since the late 1980s, the overwhelming majority of rates have been established through voluntary contractual agreements rather than litigation.

[*21*]

VI. SUBSIDIES FOR UNIVERSAL SERVICE SHOULD BE KEPT TO A MINIMUM, AND IMPOSED IN A COMPETITIVELY NEUTRAL MANNER.

59. Whatever their intended purpose, deliberate deviations between network element prices and economic costs should be kept to a minimum. Deviations of this kind inevitably distort the allocation of resources, create incentives for inefficient facilities-based entry into areas with excessive carrier prices, and create artificial barriers to efficient facilities-based entry in areas where rates are too low.

60. A deliberate wedge between prices and TSLRIC is most likely to result from a decision to subsidize universal service or other regulatory goals. It is vital for the public interest that such deviations from competitive pricing be as small as possible, and that both funding and distribution be carried out through mechanisms that are *competitively neutral* -- i.e., that do not distort competition between the ILEC and its potential rivals.

61. To be competitively neutral, a regulatory wedge between prices and TSLRIC must never favor new entrants over incumbents, or *vice versa*. It must not benefit the proprieter of a bottleneck service over a rival that purchases the service. It must not favor firms that use one type of technology over another. The reason is obvious: an such departures from competitive neutrality tend to channel the business to inefficient suppliers. This inefficient allocation of business will raise costs, repress innovation and investments and -- as usual when competition is subverted -- needlessly burden consumers.

62. For example, competitive neutrality would plainly be violated if regulation permitted (or required) the ILEC to price some end-user service, call it "service L," below its

TSLRIC, and to make up the financial difference through markups above TSLRIC on prices for carrier-to-carrier services. The below-cost pricing of service L by the ILEC, funded by overcharges for [*22*] services supplied to competing carriers, would prevent CLECs from competing successfully for the end-user service *even if more efficient than the ILEC.*

63. The same regulatory goal can be achieved in a competitively neutral fashion by (1) providing an equal subsidy to *any* firm that supplies a unit of service L; and (2) collecting funds for the subsidy from carriers or end users, *irrespective of* the identity of the supplier providing the service or serving the end user. With such a competitively neutral mechanism, the end users of service L would still face the (intended) below-cost price, and the end users of other services would still be the source of funding for the subsidy. Significantly, however, the competitively neutral subsidy would enable the most efficient carrier to succeed in serving the end-users of service L and the other services that help support service L. And since each rival, including the ILEC, would receive the same unit subsidy by providing service L, each could price down to its own unit cost, less the subsidy. Just as in a subsidy-free environment, the low-cost supplier could win the business.

DECLARATION OF ROBERT W. CRANDALL

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[*2*] Commission's Notice of Proposed Rulemaking in this proceeding. In these comments, I focus only on the economic issues involved in pricing resale, interconnection and unbundled rate elements under Section 251 of the Act.

Summary

3. The new Telecommunications Act establishes a number of new unbundling, interconnection and pricing requirements on incumbent local telecommunications carriers that the Federal Communications Commission and state regulators will have to implement with great care because of existing local rate structures. These rate structures have not traditionally been based on the cost of service, but have instead reflected the judgments of regulators that business subscribers should subsidize residential subscribers, that urban subscribers should subsidize rural subscribers, and that heavy users of interexchange services should subsidize local subscriber dialtone line rates. The rates established for unbundled elements, interconnection, and resale of local service – if set equal to economic costs, as some parties here have argued – will inevitably set in motion substantial arbitrage that will undermine the existing rate structure and could even imperil some local exchange carriers. Failure to consider how these provisions interact with one another and with the existing rate structure in the more competitive era mandated by the Act could have very serious, indeed, even dramatic consequences.

Sources of Competition

4. The 1996 Act requires states to allow competitive entry into intrastate telecommunications markets. It foresees the entry of facilities-based carriers and requires that

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[*6*] LECs are inefficiently required to offer services at wholesale prices that are below incremental cost, the incumbents should receive the universal-service subsidies for these subscriber lines.

Pricing Unbundled Elements, Call Termination, and Interconnection

10. The new Act requires incumbent LECs to provide access to unbundled network elements at technically-feasible points. The charges for the use of such elements must be "just and reasonable." From an economic standpoint, the pricing of any network function, whether for termination, interconnection, or any other purpose, should be based on long-run incremental costs, but such pricing should be regulated in the context of a carrier recovering its total costs. Because the pricing of services or elements at long-run incremental cost will likely leave the carrier far short of covering its fixed and/or common costs, even on a forward-looking basis, LRIC must be marked up to allow for full cost recovery including a return on the requisite capital if the sum of the LRIC- based rates do not cover all forward-looking costs. Under this condition, the pricing of any element, of call termination, or of interconnection should not be considered in isolation. The degree of mark-up over LRIC of each should be determined on the basis of its effect on overall economic welfare.

11. As I explain below, the measure of LRIC on which rates should be based is the cost of building and operating actual LEC networks, not hypothetical new networks that do not exist today and may never exist. If LECs are to continue as regulated entities, their rates must be based on the costs of operating the networks that they have been permitted to build under regulation. [*7*]

12. It is particularly important that call termination charges or interconnection charges not be set at zero – so-called "bill-and-keep" – on the basis of some hypothetical notion that a carrier's in-coming and out-going services are in rough "balance." A zero charge for any service whose LRIC is positive is clearly inefficient and will create the wrong incentives for building and operating facilities. Moreover, a zero charge for interconnection serves to subsidize those entrants that operate with a large surplus of out-going traffic.

13. If the current system of interexchange origination and termination rates – "access" charges – is continued while interconnection rates and the rates on unbundled elements are set at or near actual cost, very strong incentives will be created for other carriers or large customers to divert interexchange calls through competitive networks, disguising interexchange traffic as interconnected local traffic. To prevent such arbitrage and potentially uneconomic bypass, the Commission and state regulators must move rapidly to rebalance rates and to reform the existing access charge regime. But until this rebalancing occurs, the Commission and state regulators must enforce prohibitions against bypassing the current interstate and intrastate access charges levied on toll calls.

Embedded Versus Forward-Looking Costs

14. The 1996 Telecommunications Act does not establish whether the rates for unbundled services and interconnection should be based on actual embedded costs, LRIC, or TSLRIC (total-service long-run incremental cost). There could be very large differences among these [*8*] measures for various network functions, and these differences could be magnified by the fact that forward-looking costs – such as LRIC or TSLRIC – necessarily involve engineering judgments about the cost of constructing optimal networks or expanding current networks under current prices and technology.

15. It is important that the Commission and state authorities recognize that the rates for unbundled elements and interconnection are still regulated rates unless the interconnection rates are the result of negotiation between the incumbent and entrants. The regulators will therefore be faced with a choice: relying on the actual embedded accounting costs of the incumbents or arbitrary, hypothetical engineering-economic analyses of forward-looking costs, such as LRIC or TSLRIC. There are simply no market analogues for LRIC or TSLRIC. Indeed, the advocates of using such measures are often precisely those firms who wish to enter local telecommunications markets by relying upon incumbents' networks, not by building the networks that would generate measures of LRIC and TSLRIC.

16. There is moreover no way to know what these hypothetical, competitive networks look like. Are they wireless networks? Or are they fiber-coaxial cable networks, capable of offering switched video, data, and voice services? If we are to

believe one study already placed in this record,[6] these new networks from which TSLRIC estimates are to be derived are simply hypothetical efficient, modern replications of existing local-telephone company networks. [*9*] Unfortunately, there is simply no evidence that such hypothetical networks would represent an efficient use of society's resources. If this were not the case, someone would be building them. In short, the use of forward-looking estimates of costs, such as TSLRIC, requires regulators to know better than the market what are truly efficient network designs. This is surely a debatable and even dangerous assumption.

17. If the Commission chooses to adopt the forward-looking approach of TSLRIC in guiding the rate-making process for unbundled elements and interconnection, it should at least require that the hypothetical estimates of TSLRIC include all of the joint and common costs that would be required for even a new, modern carrier. For instance, the Hatfield study that has been submitted in this proceeding attributes less than 10 percent of current LEC customer-service and corporate operations costs to the TSLRIC of network operations. The remainder reflects more than half of the gap between embedded costs and its estimate of TSLRIC.[7] Given that this calculation is based on the operation of a hypothetically "efficient" new network, there is no real-world operational basis for this assumption. To establish rates for unbundled elements and interconnection on the basis of these hypothetical and necessarily arbitrary calculations of overhead and customer-service costs is obviously a precarious enterprise.

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[6] I refer to the Hatfield study cited in fn. 5, above.

[7] Hatfield, op.cit., p. 36.

18. The 1996 Act establishes a new framework for local competition in telecommunications. Local telephone companies may no longer operate as franchised [*10*] monopolists subject to oversight by state commissions. As new entry occurs and the incumbents are forced to unbundle their networks and offer interconnection with other carriers, the risk to their shareholders rises markedly. Therefore, in calculating any forward-looking measure of costs, the estimate of the costs of capital must necessarily rise as well. It would be incorrect to assume that one can calculate LRIC or TSLRIC in this new competitive era by reaching back to old state regulatory proceedings or to any period in the pre-1996 era for estimates of the cost of capital to regulated local carriers. The additional risk to shareholders must be factored into these estimates of the cost of capital.[8] However, the Hatfield study offered by MCI in this proceeding uses a cost of capital of less than 10 percent, based on an estimated cost of equity capital of only 12 percent. Given the riskiness to investors in LEC equities in the post-1996 Act environment, this assumed cost of capital would appear to be perilously low.[9]

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[8] This risk is likely to be reflected in higher borrowing rates (for bonds) and higher returns on the needed equity to reward stockholders for assuming this new risk from competition.

[9] Indeed, the estimated Beta coefficient – a widely used measure of relative risk – for most LECs has been rising for some time, reflecting the market's judgment that the riskiness of local-exchange operations is rising in the increasingly - competitive telecommunications sector.

AFFIDAVIT OF PROFESSOR JERRY A. HAUSMAN

1. My name is Jerry A. Hausman. I am MacDonald Professor of Economics at the Massachusetts Institute of Technology. I received an A.B. degree from Brown University and a D. Phil. (Ph. D.) in Economics from Oxford University. My academic and research specialties are econometrics and microeconomics. I have done extensive research on economics of the telecommunication industry and have frequently testified before the FCC on issues related to regulation of local exchange companies. In 1985 I received the John Bates Clark Award of the American Economic Association for the most "significant contributions to economics" by an economist under forty years of age. I have been retained in the above-captioned matter by the United States Telephone Association.

I. Summary and Conclusions

2. The same economic principles should be used in the pricing of interconnection, unbundled network elements, and transport and termination services. Economic efficiency requires that goods and services be produced in the least cost manner. Cost based prices for interconnection, unbundled network elements, and transport and termination will lead both the seller and the buyer of those services to make economically efficient choices. The first principle of an economic approach to interconnection charges is thus that a LEC should be compensated for its costs of providing such interconnection. Undercompensation will provide disincentives for LECs to invest in their networks over time and may make it cheaper for a [*2*] competitor inefficiently to use an existing network rather than build its own competing facilities.

3. Numerous regulatory distortions and other economic factors weigh strongly against applying long-run incremental pricing to interconnection and network elements. For a single-product firm in a competitive market free of regulatory distortions, economic theory recommends prices based on long-run incremental cost. LECs, however, are multi-product firms with economies of scale and scope that result in joint and common costs arising from network investment. These costs need to be recovered for a LEC to continue to make efficient investments in its network and to stay in business. TSLRIC (or LRIC) does not permit these costs to be recovered in an economically efficient manner. LECs also have historical costs due to past network investments. Technological change will deprive LECs of recovering costs if rates are always measured on the basis of a forward-looking optimal network model. Yet a policy setting rates on that basis would create incentives for LECs to underinvest. Productive efficiency requires that embedded costs of efficient investment in the network be recovered by the LECs.

4. Until federal and state regulatory distortions, and subsidization of services created to serve regulatory policy objectives, are eliminated, it would be inappropriate regulatory policy and incorrect economics to price interconnection at TSLRIC or LRIC because of the significant regulatory arbitrage which would be created and because a significant source of contribution to fixed and common costs would not be replaced by an alternative source. Even then, no firm will be totally free of joint and common costs; therefore it would not be appropriate for the Commission to mandate pricing at TSLRIC or LRIC. Also, the "reasonable profit" allowed by the 1996 Telecommunications Act (1996 Act) will not be possible if interconnection prices are set at LRIC or TSLRIC.

[*3*] 5. The same principles dictate that reciprocal compensation arrangements for transport and termination must cover the costs of providing those services. Policies that may lead to underrecovery, such as bill and keep, lead to market failure and economic inefficiency.

6. The "avoided-cost" standard for establishing wholesale prices under the Act is economically efficient. Avoided costs should be measured as the additional costs of providing a service at retail assuming the service is already being provided at wholesale. That is to say, the wholesale price should be set at the retail price, less avoided costs, plus costs incurred in wholesaling the service. The efficient discount for wholesale prices is thus net avoided cost.

II. The Pricing of Interconnection, Network Elements, and Transport and Termination

7. For an unregulated, single-product firm, economic theory holds that efficient prices should be based on long-run incremental cost. Interconnection, network elements, and transport and termination are intermediate goods. If the price for an intermediate good (or input of production) exceeds its cost, the user of the intermediate good will tend to shift to a lower-priced, but potentially higher-cost, input. Because economic efficiency requires that the lowest cost input be used, society's resources will be wasted. This loss of productive efficiency is an aspect of the overall loss in economic efficiency that occurs if rates are not set at incremental cost.

8. However, numerous regulatory distortions and other economic factors recommend against applying this incremental-cost rule to interconnection pricing. Most importantly, LECs are multi-product firms with economies of

scale and scope that result in joint, common and embedded costs arising from shared [*4*]facilities and network investment.

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[*6*]have invested billions of dollars in their existing networks. If prices do not take account of those economic costs, an incentive will be created for the new CLEC entrant to minimize its cost while taking advantage of the existing networks and not paying for usage. Such market failure will cause future underinvestment in networks because companies will understand that they will not be able to recover their economic costs.

13. Thus, LRIC or TSLRIC may provide a starting point for calculating regulatorily mandated interconnection prices but, because LECs must cover their joint, common and historical costs as well, incremental costs cannot be a ceiling for those rates. No economic basis exists for the Commission to issue a rule restricting interconnection prices to LRIC (or TSLRIC).[3]

B. The Reasonable Profit Standard of the 1996 Act

14. A further consideration is that interconnection rates set at LRIC, or at TSLRIC, do not include the "reasonable profit" which the 1996 Act permits. Two economic reasons lead to this conclusion. First, telecommunications equipment prices have been decreasing so that LRIC or TSLRIC, which is forward looking, will lead to a lower cost estimate than the

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[3] In competitive situations LECs may voluntarily lower rates to LRIC to meet competition. LRIC is a valid floor for competitive rates because it allows marginal-cost recovery but not predation.

actual costs incurred by a [*7*] LEC in building its network.[4] If LRIC or TSLRIC is used, a reasonable profit will not be earned by the LEC. Instead, an economic loss will be incurred by the LEC because it will not recover the cost of its investment. The NPRM recognizes this problem when it states that "setting the price of discrete services and elements equal to the forward-looking LRIC of each service or element is not likely to recover the historical costs of incumbent LECs' networks." (¶ 144) If the Commission, through its regulatory policy, causes LECs to lose money on economically efficient investment, it will discourage future investment and contravene the explicit language of the 1996 Act which states it is designed "to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans."[5]

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[4] Even if actual historical network investment decisions were always completely efficient at the time they were made, improvements in technology will always guarantee that a totally new, hypothetical, network will have a theoretical lower cost than the actual network in place (or otherwise the older technology could be used in the hypothetical network). Thus, basing cost on the current most efficient technology will impart a downward bias on estimates of actual network costs, causing an economic loss to the LECs which made the historical investment. Thus, the study method proposed by Hatfield and Assoc. (March 1996, submitted on behalf of MCI) which claims that the existing network is "irrelevant" (p. 16) is incorrect as a matter of economics and would lead to a downward biased estimate of LEC costs. In a competitive market situation, a potential entrant could choose a new technology, but if the potential entrant decides not to enter, the hypothetical costs do not enter the pricing decisions. Thus, MCI can decide to invest in a network, but otherwise, the actual costs should be used to set prices, not hypothetical costs.

[5] Economic theory has focussed recently on the problem of "time consistency" in government policy. If the government (or regulators) confiscate private investment through taxation (or low mandated rates), the

(continued...)

15. The second reason that the "reasonable profit" requirement would not be satisfied is that some of the costs of the network will be fixed and sunk, even within the forward looking horizon of a LRIC study. These sunk costs will not be counted in the forward looking costs of a LRIC study, but they [*8*] are again investments incurred by the LEC in building its network. Failure to account for these sunk costs will again lead to the outcome that the LEC will not earn a "reasonable profit", but instead will face an economic loss and face inefficient investment incentives.

16. The NPRM's proposal that a transitional pricing mechanism could be set at short-run marginal costs (¶ 132) directly contravenes sound economic principles. Short-run marginal costs do not account for the cost of capital at all. Thus, short-run marginal costs would not cover the joint, common, and historical costs of providing the service, let alone yield a "reasonable profit". The use of a marginal cost standard would be equivalent to a forced monetary transfer from the LECs to their competitors. Such a transfer would reduce economic efficiency and is inconsistent with the obligation of regulators to allow a regulated company the opportunity to cover its costs, including a return on capital invested.[6]

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[5] (...continued)
market will build this risk into higher discount rates which will lead to decreased future investment. Causing an economic loss on efficient investment through regulatory policy is a form of confiscation by the FCC.

[6] To an economist, profits are measured as revenues minus costs. Costs include wages, material, and the cost of capital. To achieve the "reasonable profit" allowed by the 1996 Act, a markup above LRIC is required to help cover the fixed and common costs of the network which are not included in LRIC or TSLRIC. Indeed, regulation of LECs has often considered profit, (continued...)

C. The Use of Proxy Variables to Set Rates

17. Measurement of costs, no matter how defined, is in my experience labor intensive, time consuming, and contentious. The NPRM raises the possibility of using proxy variables to set rates (¶ 134). The idea provides significant potential benefits because transaction costs are likely to be much lower if the Commission provides a safe harbor that both parties know is[*9*] acceptable.

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[6] (...continued)
also often called contribution, as the difference between revenue and embedded cost. Thus, the "reasonable profit" criterion of the 1996 Act is consistent with past regulation of LECs, because without profit to pay for the joint and common costs, LECs would go out of business because the total revenues would be below their total costs on a company-wide basis.

COMMENTS OF THE PEOPLE OF THE STATE OF CALIFORNIA AND THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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[*28*]

D. Pricing Issues

1. Rates for Interconnection and Network Elements Can Be Determined by Means Other Than Traditional Cost of Service Regulation.

The FCC tentatively concludes that language in the Act precludes states from setting rates by using traditional cost of service regulation, with its detailed examination of historical carrier costs and rate bases. NPRM, ¶123. The FCC goes on to state that the statute appears to contemplate the use of other forms of cost-based price regulation, such as price cap regulation or setting the prices based on forward-looking cost methodology, such as long-run incremental cost ("LRIC"), that does not involve the use of an embedded rate base.

The CPUC has been using price cap regulation for its two largest LECs, Pacific Bell and GTEC, for the past seven years. Last year, the CPUC began regulating one of California's mid-sized LECs, Citizens Telecommunications Company, under price cap [*29*] regulation. These three companies serve more than 97% of the access lines in California. The CPUC has also identified TSLRIC as the standard for the cost studies being prepared in the unbundling proceeding. It is important to note that both Pacific and GTEC have submitted TSLRIC studies that use current expenses. These studies assume the use of least cost technologies that are

currently deployed, and at current investment cost, together with the most current actual operating expenses.

2. The CPUC Is In the Process of Setting Prices for Unbundled Elements.

The FCC states, "[t]he California Public Utilities Commission has set prices for unbundled elements based on a forward-looking calculation of TSLRIC, which excludes shared and common costs." NPRM, ¶127. The CPUC has not yet set its prices for the unbundled elements. That issue will be the subject of hearings this summer with a final order due in December 1996. The CPUC has adopted TSLRIC as the standard for developing the costs of the unbundled elements. (See Attachment 3 on Consensus Costing Principles.) In the hearings this summer, the CPUC will determine the unbundled network elements and what level of shared and common costs should be included in the price of each unbundled element.

Attachment C

STATE OF CONNECTICUT

DEPARTMENT OF PUBLIC UTILITY CONTROL
ONE CENTRAL PARK PLAZA
NEW BRITAIN, CT 06051

DOCKET NO. 94-10-02 DPUC INVESTIGATION INTO THE UNBUNDLING OF THE SOUTHERN NEW ENGLAND TELEPHONE COMPANY'S LOCAL TELECOMMUNICATIONS NETWORK

June 15, 1995

By the following Commissioners:

Thomas M. Benedict
Reginald J. Smith
Michael J. Kenney

DECISION

[*9*] necessary to generally set forth the two principal cost methodologies discussed in this proceeding.[39]

Long-Run Incremental Cos (LRIC) - an economic technique that considers an increment of demand smaller than the demand for the total service. This methodology is designed to determine the additional cost per unit that the supplier will actually incur (or the economic benefit that will be realized) over time with any increase (or decrease) in providing the volumes of the service that are under consideration. Kahn Testimony, p. 3.

Total Service Long-Run Incremental Cost (TSLRIC) - an economic technique that is a modification of the LRIC approach but employs the total demand for a service as a base for calculation. In the current proceeding, two versions of TSLRIC were debated, one introduced primarily by SNET (hereafter referred to as TSLRIC(SNET)) and the other by MCI (hereafter referred to as TSLRIC(MCI)). Some explanation of each is necessary in order to properly frame the discussion later in this decision and the Department's specific conclusions.

TSLRIC(SNET) presumes that a substantial level of physical plant investment has already been made by the LEC and concerns itself only with determining the incremental costs of providing additional service in the future using available,

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[39] A third type of cost study was presented, but not as a substitute for incremental cost analysis. The AG and OCC advocate consideration of stand-alone costs as an additional cost standard. Tr. 02/01/95, pp. 260-62; Gabel Testimony p. 7; Tr. 03/01095 pp. 703-07; Cooper Surrebuttal Testimony, p. 11-12. Stand-alone costs are not incremental costs, but the cost of producing a single service separately from all other services. Tr. 03/01/95 p. 623.

least cost technologies. Tr. 01/31/95, p. 16. TSLRIC(SNET) constructs its evaluation upon a company's existing technological investment and logistics and considers the total avoidable costs if the service were to be discontinued. Tr. 03/01/95, p. 649. Both of these principles are generally accepted techniques and previously approved by this Department. SNET considers the existing network and cost structure as a given to determine the most efficient changes to its facilities. According to SNET, investment decisions would be substantially different if existing investment was not incorporated in the model. Tr. 2/1/95, p. 209.

TSLRIC(MCI) proposes, on the other hand, that the Department authorize use of a modified TSLRIC methodology that accepts as a given the locations of existing basic facilities, but assumes for the exercise that the physical facilities themselves do not currently exist. In doing so, MCI implicitly concludes that the physical plant in use by SNET today could constitute a relatively inefficient economic decision and, therefore, a substitute architecture is necessary from which all incremental cost can be better determined. This somewhat existentialist methodology has attracted a certain level of regulatory interest throughout the country, but has yet to achieve a level of general acceptance by either regulators or the industry.

[*10*] In testimony before the Department, MCI suggested that a "scorched node" approach such as it has proposed with TSLRIC(MCI) was essential to characterizing a more accurate representation of incremental cost in such a dynamic and changing technology climate. MCI proposed the Department employ a model that employs a conceptual geographic template in which locations of all existing routes and facilities are accepted as given and, on a forward looking basis, only the

most modern, least cost technology is utilized to satisfy incremental requirements for service. Though MCI accepts the fact that this does not produce the real incremental cost of service, in MCI's view, it produces the most desirable outcome (i.e. the lowest possible incremental cost). Tr. 3/1/95, pp. 734-35.

Having set forth this general overview of the main debate surrounding the issues of TSLRIC methodology, the following section provides in more detail the respective participants positions on the matter.

C. Positions of Participants

1. The Southern New England Telephone Company

SNET appears in this proceeding as the principle subject of the Department's investigation of cost-of-service methodologies. Other participants in this proceeding, though their participation is essential to defining the most appropriate technical outcome, are generally not telephone companies and are, therefore, not subject to the conditions placed upon SNET by this proceeding and Public Act 94-83. Because of it's unique position, SNET availed itself of the opportunity to offer comment upon both the suitability of current cost-of-service methodologies previously prescribed by the Department as well as techniques proposed by other participants in this proceeding.

SNET constructs its position in this proceeding on independent, but related, arguments. First, SNET contends that its proposed methods of calculating cost of service are consistent with those prescribed by the Department's past decisions in Docket Nos. 88-03-31 and 89-12-05. SNET

Comments, p. 12. Second, SNET suggests that the incremental cost methods adopted by the Department in those proceedings were purposefully chosen because of their presumed utility in a competitive marketplace such as that envisioned by Public Act 94-83. SNET Comments, p. 13. Third, SNET suggests that its proposed cost-of-service methodologies adhere to sound economic principles, will foster competition and will do so in the most efficient and effective manner possible. SNET Comments, pp. 16 and 21. Fourth, SNET states that the study periods it currently uses are generally three to five years in duration, sufficiently suitable for this Department's planning efforts. Finally, SNET suggests that its methodology is sufficiently flexible to meet future uncertainty because investment costs are generally not limited to the study period given the use of techniques that extend the study period over the service life of the investment.

On the other hand, SNET expresses unqualified disagreement with MCI's proposed methodology for determining incremental cost-of-service in the future.

AFFIDAVIT OF EDWARD C. BEAUVAIS, Ph.D.

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The pricing of telecommunications services has three fundamental purposes: 1) revenue generation; 2) distribution of costs across customers; and 3) allocative efficiency. The first two items are largely a matter of rate level, the third is a rate structure issue.

Telecommunications pricing has three fundamental purposes: (1) To generate revenues at least sufficient to cover the costs of the firm; (2) To distribute the recovery of those costs among customers; and (3) To create economic incentives to align production and consumption decisions. Clearly the issue of cost arises in all of these areas, so that costing and pricing are related. However, they are not the same and it is very important in developing an efficient and economically correct cost methodology that the two concepts not be confused.

The first fundamental purpose of pricing is to cover the firm's cost. Prices must produce sufficient revenues to cover the firm's costs. Once the total costs have been determined, it must be decided which customers will recover what proportion of the costs. This is clearly where much of the dispute in telecommunications pricing occurs. In an adversarial proceeding it is always in the interest of one group to view the firm's costs as revenues to be collected from someone else. The proposal set forth herein will assign costs in an economically efficient manner.

The LECs should be allowed the opportunity to recover their costs. FDC does not produce the correct result.

An FDC study requires all costs to be allocated to all products and services, even when there is no direct **causal** linkage among the costs and the products. *The greater the number of products offered over joint and common facilities, the more difficult and misleading this distribution of costs becomes.*

Economic theory is absolutely clear that the relevant costs to look at in making pricing decisions are incremental costs. For expository purposes, I am using incremental and marginal cost interchangeably. So long as the marginal revenue derived from the sale of one more unit is greater than the incremental cost of producing and selling that unit, a profit maximizing firm would want to sell that unit. Likewise from a public policy perspective, so long as the marginal benefit (price) to consumers is greater [*3*] than the incremental cost, society is made better off by producing and consuming the additional unit. FDC totally disrupts this decision process. The incremental benefits to the firm/public should be compared to marginal/incremental cost - not fully allocated/fully distributed costs. Thus, I strongly urge the Commission to avoid *any* linkage between FDC cost study results and pricing.

Incremental costing is the initial starting point for pricing decisions. Pricing all services at incremental cost is not feasible given the level of common costs in an efficient firm.

Given my understanding of FCC objectives and the rivalrous nature of the marketplace, incremental costing should be employed as the starting point for pricing decisions. Incremental costing is useful to establish a floor to avoid cross

subsidization.[1] However, joint and common costs must also be recovered. It is widely acknowledged that pricing all services at marginal cost will yield insufficient revenues in the presence of economies of scope and scale. Given this result, the intersection of the first two fundamental purposes of telecommunications pricing implies that prices must depart from a first-best world measured in terms of marginal benefits equaling marginal costs. Simultaneously, the public policy objectives of the Commission will also require some departures from strict adherence to economic first-best rules. However, when such departures are required, the movement away from marginal cost pricing should be made in the most efficient manner possible. *Movements away from strict adherence to marginal cost pricing must take into account the demand characteristics of customers if an efficient outcome is to be achieved and the firm is to recover its total costs.*

It is the movement away from strict accordance with marginal cost pricing where the firm's common costs are recovered. That is, one need not assign or allocate the common costs to all services prior to engaging in the pricing exercise. It is sufficient to know their value in aggregate along with the [*4*] incremental costs of the array of products and services. The pricing of the services can then be done by taking into account the demand characteristics of the services, so that the

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[1] It must be acknowledged that the Commission has public policy objectives other than economic efficiency in pricing. However, the pursuit of public policy goals must be separated from the issue of costing. Attempting to incorporate the public policy objectives into costing confuses pricing and costing issues.

total revenues of the company are equal to the total cost/revenue requirement.[2]

Given the substantial level of common costs, the pricing of telecommunications services must be approached in a holistic manner rather than piece-parted. A Ramsey-type approach or a multipart tariff is appropriate.

Cost estimates and methodologies *by themselves* are of no use in addressing the issues of subsidization, predatory pricing, or protection of monopoly services from being allocated all the common costs of the firm. All of these issues involve the relationship of price to cost, so that none of them can be discussed without taking account of that relationship. This is the fundamental reason why I outlined the framework earlier. However, only costing issues should be addressed in the development of the costing approach, not the issues of pricing.

The first issue is the protection of "monopoly" service from being allocated all the common costs at the expense of "competitive" offerings. An efficient pricing scheme would *not* recover the common costs from just "monopoly services". Rather in determining the prices for all services, the common costs would be recovered from the array of services *roughly* in inverse proportion to the elasticity of demand for each service. This is the familiar Ramsey-pricing solution. All services would make a contribution to the shared and common costs of production and the degree of contribution would be determined by the demand characteristics of purchasers for each service. Therefore, while all services would be making a contribution

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[2] Even a non-regulated firm will have a "revenue requirement" in the sense that investors have expectations of earnings which the firm must satisfy in light of the riskiness of the markets served.

toward the shared and common costs of the firm, those services with the least elastic demand would initially make a greater contribution.

[*5*] The type of pricing structure and price levels recommended promote competitive entry on a dynamic basis.

If the Commission attempts to limit the price increases on the lesser elastic services, it limits the market forces which will increase the firm's elasticity over time. Since market entry is determined in large part by the profitability of the market, by holding down the price for those services, the Commission is limiting the incentive of new firms to enter the market. Further, since one of the principle determinants of the price elasticity of demand faced by an individual firm is the number of firms offering similar products, this restriction on entry places downward pressure on the elasticities. One is led to the conclusion, therefore, that following the precepts of optimal departures from marginal cost pricing, will lead to (1) a case of increasing competition in those services where demand is currently more inelastic as the price rises and (2) that the level of contribution obtained from the mix of "competitive" and "monopoly" services will tend to equality at the margin over time. In working through the dynamics, it would be expected that the percentage of contribution coming from "monopoly services" would decrease over time while the percentage of contribution from "competitive services" would increase. In any event, in virtually no case would "monopoly services" be assigned the burden of all shared costs or vice versa.

I am recommending reliance on Ramsey-type rules for pricing, or other second-best approaches. GTE does not currently have information on elasticity of demand for every service; however, it has information on the demand

characteristics of many services indicating the directions in which relative prices should be moved. Such elasticities are clearly different across services currently offered.[3] While it is true that the use of the inverse elasticity rules can be gainfully employed to establish relative price levels of the various services, I would recommend that multipart price structures be employed as the primary [*6*] pricing mechanisms, rather than strict reliance on the inverse elasticity approach. In such a rate structure, the price of the marginal unit would be set at or very close to the incremental operating costs while the inframarginal prices would be priced higher to cover the other costs of the service. Such a price structure improves the economic welfare gains derivable from uniform inverse-elasticity (Ramsey) pricing, since the marginal price is set much closer to the marginal cost of a service. This non-linear multipart rate structure may be thought of as a declining block pricing plan for a service. In addition to generating revenues sufficient to cover the joint and common costs of the firm, this non-linear structure can readily reflect the notion of "avoided costs." Retail customers are likely to be smaller volume customers relative to wholesale customers. Accordingly, the price difference between the first and last block can incorporate the net avoided costs. Even in the non-linear multipart rate structure, however, the price elasticities of demand must be taken into account when pricing a service subject to economies of scope or scale. The important fact in this proceeding, however, is that both

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[3] It is often argued that since elasticity estimates are not available on every service that Ramsey is not implementable. Ramsey is a very useful conceptual idea and information on price elasticities are available on numerous telecommunications services. In any event, making assumptions such as the application of uniform mark-ups is clearly inappropriate given the existing knowledge of price elasticities.

approaches involve departures from strict reliance on pricing at incremental cost in order to cover the common costs of the firm.

Within the context of a multi-product firm characterized by economies of scope and scale, one must also deal with the issue of how to handle common costs among services. To allocate the costs *ex ante* is only required if one believes in something akin to an FDC methodology. Thus, my opinion is that no allocation of common costs is or should be required on an *ex ante* basis. At the same time, **the total costs of the firm must be recovered.** The mechanism to do so is in the pricing of the service, not in the costing of a service.

As pointed out previously, the second fundamental purpose of any price is to distribute the costs among the customers of the firm. I have indicated how to address the issue - by an approximation of the inverse elasticity rules or by the use of a multipart rate structure. In so doing, the *ex post* allocations of the joint and common costs would be determined, in part, by the competitive nature of the service as reflected in the firm's price elasticities of demand. To the extent that constraints on the process are required to meet social or public policy objectives, then a second-order constrained price determination process could be [*7*] conducted following the same methodology. The resulting distribution of contribution to the joint and common costs of the firm will be roughly inversely proportional to price elasticities of demand for the services. To the extent that constraints are placed on the process, the contribution levels will not be strictly proportional, but will depend upon the services constrained.

The costing requirements set forth in the 1996 Act contemplate prices which are necessarily greater than either LRIC or TSLRIC.

The Telecommunications Act of 1996 ("Act") in Section 252(d) calls for the pricing of interconnection and network elements to be "based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the interconnection or network element (whichever is applicable)." In addition, this Section specifies that these prices will be "nondiscriminatory" and "may include a reasonable profit." While TSLRIC is a very reasonable starting point for the development of such prices, it is not adequate to recover joint and common costs. Indeed, since the 1996 Act specifies that a reasonable profit may be included, any price must make at least some contribution to the joint and common costs of the firm in excess of TSLRIC before profit levels can even be considered.

I urge the Commission to adopt eight principles to be applied to cost studies.

To be consistent with the 1996 Act's requirements with respect to the cost-basis, I believe there are eight (8) major factors the Commission should consider in evaluating whether to endorse a given costing standard: (1) the nature of the total cost function for a telecommunications company; (2) the distinction between short run cost functions and long run cost functions; (3) the treatment of service specific common and or fixed costs; (4) the relevant incremental costs; (5) the separation of pricing and costing; (6) considerations of market structure and degree of competition; (7) utilization of the most efficient

technology; and (8) reconciliation to company-specific revenue requirement.

The long run total cost function of the firm shows the relationship of the total costs of the firm to the mix and level of outputs, given the most efficient technologies that are representative of the firm's and [*8*] forward-looking costs. Thus a cost function is a causal relationship based on the underlying production function. Even in a long run specification, there may exist common or up-front costs which do not vary with the outputs of individual services, but do vary with the offering of a specific service or group of services. In the case of multiproduct firms which produce their output in variable proportions, as in the case of telecommunications, it is possible to derive separate long run incremental costs estimates for each specific product, holding all other outputs constant. Thus there will be an incremental cost curve for any one product, corresponding to each possible output of the other product or products. This incremental cost function will specify the costs which vary with output as well as any service-specific fixed costs which vary with the offering of the service. However, in a multiproduct firm, there is no counterpart to the single product firm's average cost. Where joint and common costs are present in the long run total cost function, any allocation of such costs to one product among the set of products supplied is irrational in the sense that it does not reflect cost causation. If price is set on the basis of such an arbitrary allocation, too little of the product may be produced. Correspondingly, too much of other products may be demanded if other prices are set too low based on the misallocation of the common costs.

To the extent that in the long run there are common costs associated with the application of the forward-looking technology, they will be included in the total cost function. Further, to the extent that the underlying production function is

characterized by discontinuities, e.g., lumpy capacity investments, the resulting cost functions, both total and incremental will also display discontinuities. Even in the long-run, there will be costs to provision a specific service which occur in a discontinuous manner; that is, there will be costs which do not vary with the level of output of that service, but do vary with the offering of the product. These are the long-run service-specific fixed costs. It is also possible and indeed likely that there will be up-front costs, also referred to as common service-specific fixed costs, that are ***causally*** related to the provision of a number of products. While such costs can be attributed on a causal basis to the provision of the set of products, even in the long run, no allocation of the common costs to the individual products can be made on a causal basis.

INITIAL COMMENTS OF THE PUBLIC UTILITIES COMMISSION OF OHIO (PHASE I)

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The FCC seeks comment on how, if rates are to be set above LRSIC, to deal with the problems inherent in allocating common costs and any other overheads. Additionally, the FCC seeks comment on whether it should limit rates to levels that do not exceed stand-alone costs. NPRM at ¶ 130.

The PUCO, like the FCC and other states, has been seeking a solution to this dilemma for some time. The PUCO recognizes that setting interconnection prices and unbundled network element prices at a level which allows the ILECs recovery of all common overhead cost without regard to allocation will keep the ILECs "whole" and will likely prohibit competition. On the other hand, affording the ILECs recovery on the basis of a specified allocator of common overhead costs will likely provide prices set at a level to entice competition, at the same time incenting the LEC to lower its common overhead cost by becoming more efficient or to recover its common cost by pricing above its cost floor for competitive end user services. The PUCO has adopted a common overhead allocation policy that requires LRSIC plus a 10% adder, as well as joint costs to be reflected establishing a price floor for competitive service offerings.

As discussed above, stand-alone cost studies are an analysis of embedded costs and embedded decisions. These types of studies are hypothetical situations that analyze each offering as if it were the firm's only offering. While the PUCO Staff does not disagree with the notion of capping the prices of certain service offerings, it does not agree that a stand-alone methodology appropriate for capping rates. Stand-alone cost

studies are burdensome to conduct. See the PUCO's Staff comments on NPRM ¶ 233 for a discussion of capping rates on the basis as an imputation test and the [*48*] relationship between pricing for transport and termination of traffic and unbundled network elements.

COMMENTS OF THE PUBLIC UTILITY COMMISSION OF TEXAS

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[*26*]

45. The Notice seeks comments on whether prices for interconnection and unbundled network elements should recover embedded costs or universal service costs.[81] As discussed previously, the Texas PUC firmly believes that regulators cannot begin to answer pricing questions until incremental cost studies on unbundled network elements are completed and we more precisely quantify the disparity between embedded and incremental costs. States must be allowed the discretion to determine, after appropriate review and consistent with state policies, the extent to which costs such as those described in these sections should be included in specific prices.

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[81] Notice, paras. 144-145.

[*40*] overhead, and the like that are necessary to run the firm as a whole, which are not incremental to any individual service or to any specific group of services, but are incurred so long as the firm is operation at all. Hausman Aff. ¶ 8.

(d) Total costs should reflect actual, embedded costs. Even accounting for all forward-looking costs is not a sufficient measure of total costs. Embedded costs due to past investments in the network must also be recovered. Networks evolve over time and will never contain only the very latest technology. Yet the LECs have incurred substantial costs in building the existing infrastructure and should not be saddled with ex-post facto regulatory revisions that bar prices that recover those legitimate costs. Hausman Aff. ¶¶ 10-15. If new competitors want to use the LECs's embedded plant, then they should pay for the embedded plant, not for some ideal network that they are not using, that doesn't exist, and that will never exist.

Although the Act prohibits regulators from engaging in rate-based proceedings to determine embedded costs of incumbent networks, it does not limit recovery only to forward-looking costs. See S. Rep. No. 23, 104th Cong., 1st Sess. 21 (1995) (reference to "rate of return or other rate based proceeding" describes a type of regulatory proceeding, not a pricing methodology). Section 252(d)(1) simply refers to "cost," without any restriction to forward-looking costs. Such a limitation would, moreover, be incompatible with Section 252(d)(1)(B), which allows recovery of a reasonable profit margin.

[*41*] (e) Precluding LECs from recovering total costs would create incentives for inefficiencies. In addition to being incompatible with the Act, if the Commission set a price ceiling that generated revenues below total costs, it would provide incentives for inefficient investment. Hausman Aff. ¶¶ 11-12. Such rates will deter LECs from undertaking investments to improve the network because of the considerable risk that costs will not be recovered. Unless regulators permit rates that compensate LECs for investments in their networks, LECs will rationally invest less than would be socially optimal. On the demand side, when prices are set too low entrants will overconsume interconnection and network elements from the incumbent LEC and underinvest in their own facilities, and inefficient firms will be able to enter the market. Prices set only at incremental cost, for example, allow entrants to provide service over the LEC's network without having to bear the joint, common or embedded costs that would arise if competing facilities were built. This result is inefficient and contrary to the Act's purpose of promoting the emergence of facilities-based local competition. The Commission has already recognized that "low charges for interconnection with LEC facilities . . . would give interconnectors false economic signals that could stimulate uneconomic entry." Special Access Interconnection Order, 7 FCC Rcd at 7429 n.291.

(f) Precluding LECs from recovering total costs would be confiscatory. Rate regulations that prevent LECs from recovering their costs or providing interconnection and unbundled elements are [*42*] also confiscatory, and as such are subject to scrutiny under the Takings Clause. See Duquesne Light Co. v. Barasch, 488 U.S. 299, 308-10 (1989) ("If the rate does not afford sufficient compensation, the State has taken the use of utility property without paying just compensation and so violated the Fifth and Fourteenth Amendments."); FPC v. Hope

Natural Gas Co., 320 U.S. 591, 602 (1944) (to avoid being confiscatory rates must allow carriers to earn returns sufficient to attract investors). Restricting LECs to rates that cannot generate revenues sufficient to cover total costs on LEC investments will lower returns and reduce their ability to attract new capital.

Moreover, rate regulations that fail to account for joint, common and embedded costs would interfere with the expectations on which LECs have based past investment decisions. Decisions about how much switch and loop capacity to build required assessments not only of future revenues to be earned from those facilities but also of the investments required to meet regulatory requirements. For the Commission to decide now, long after those costs have been sunk, to bar compensatory returns undermine the LECs' legitimate, investment-backed expectations. Interference with property rights in a manner that undermines such expectations constitutes a taking. Penn Central Transp. Co. v. New York City, 438 U.S. 104, 124 (1978).

Any interpretation of the Act that effectuates a taking will not survive judicial review under established principles of administrative law. It is well settled that, "[w]ithin the bounds [*43*] of fair interpretation, statues will be construed to defeat administrative orders that raise substantial constitutional questions." Bell Atlantic Tel. Cos. v. FCC, 24 F.3d 1441, 1445 (D.C. Cir. 1994); see also, Rust v. Sullivan, 500 U.S. 173, 190-91 (1991). Indeed, where property rights are implicated, a fair reading of the statute must provide a "clear warrant" for the agency's authority to take property. Bell Atlantic, 24 F.3d at 1446. The 1996 Act provides no such warrant and is more naturally read to precluded the Commission from establishing below-cost rates.

(g) A reasonable profit means a positive profit, not just a return on capital. Profit is the excess of the firm's total revenues over the firm's total costs, taking into account all costs including the cost of capital. The cost of money to purchase capital assets is a necessary component of incremental costs, joint and common costs, and embedded costs. A firm that merely recovers all those costs, including the cost of capital, has not earned a positive profit. Without the potential for a positive profit, investors would have no incentive to risk their capital in building new plants and facilities, and the public interest would suffer because consumers would be deprived of the benefits of such facilities. Hausman Aff. ¶¶ 12-13.

(3) Rate Levels.

(a) LRIC-Based Pricing Methodology. For the reasons given above, the Commission should not set a ceiling on prices for interconnection and unbundling that does not allow the LECs to recover the incremental, joint and common, and embedded [*44*] costs of their networks, as well as a reasonable profit. It follows that two cost measures on which the Commission has sought comment, LRIC (long-run incremental cost) and TSLRIC (total service long-run incremental cost), cannot appropriately serve as rates for network elements or interconnection. LRIC could serve as a price floor only in the context of voluntary price negotiations or when pricing in response to competition. LRIC cannot be mandated by a state commission or the FCC because it does not allow recovery of total costs.

(i) LRIC. LRIC is the long-run cost of providing a specified additional quantity of a LEC's service or, alternatively, the amount a carrier saves by dropping that incremental quantity of service. LRIC does not account for the fixed or underlying costs of providing the service on the network. These fixed or "lumpy" costs of providing the service

are incurred regardless of whether a few customers more or less are served. Thus, a price set at LRIC would not even cover the costs of the particular service and would make no contribution to the joint costs of facilities shared with other services, the common costs of the network as a whole, or embedded costs. Hausman Aff. ¶¶ 10-13.

The Commission has itself recognized that LRIC is an inappropriate standard for mandated prices because such rates "will not recover the total costs of the network. Notice of Proposed Rulemaking, Interconnection Between Local Exchange Carriers and Commercial Mobile Radio Service Providers, CC Docket 95-185, ¶ 48 (released Jan. 11, 1996) ("LEC-CMRS Interconnection Notice"). See [*45*] also Special Access Interconnection Order, 7 FCC Rcd at 7429 n.291 ("it would not be reasonable to require the LECs to base [expanded interconnection] charges on the direct costs of those services, with no loadings for overhead costs"). If LECs can only charge entrants incremental costs, they must recover the fixed costs elsewhere, such as through increases in retail rates. But because the entrants do not have to bear the fixed costs, they can undercut any retail price increases made by the LECs and take the LECs' customers. This distortion deters entrants from making efficient investments in facilities and deters the LECs from developing new services. Thus, LRIC alone cannot be the basis for legally and economically sound pricing of interconnection or unbundled network elements.

LRIC may be useful as a price floor, however, to prevent anticompetitive or predatory pricing. As competition increases, LECs will need to respond to the prices set by new entrants who have built their networks from scratch, using the latest technology, and are not burdened by the LEC's historical costs. As long as prices are set above LRIC, the LECs will still be able to compete for this business and make a contribution to their embedded costs. Thus, a price floor set at LRIC gives LECs the

flexibility to respond to competitive conditions, while still ensuring that the marginal costs of the service in question are covered so that the LEC's prices are not predatory. Hausman Aff. ¶ 13.

(ii) TSLRIC. TSLRIC captures the costs that would be saved by the LEC if it did not provide the [*46*] entire service in question. Accordingly, TSLRIC may capture the "lumpy" costs of providing a particular service. That is to say, TSLRIC includes service-specific fixed costs (non-volume-sensitive costs), while LRIC typically holds these costs separate from volume-sensitive costs. But if a service uses facilities that support other services, TSLRIC will still not cover joint and common costs or embedded costs, much less provide for a reasonable profit. Hausman Aff. ¶¶ 10-11.

Prices set at TSLRIC would therefore be inconsistent with the Act's requirement that the LECs be permitted to recover their total costs plus a reasonable profit. Prices set at TSLRIC would also distort the LECs' technology decisions. When a LEC can use the same facilities to support several distinct services, economies of scope are realized. Inputs can be shared instead of being installed separately for each service. Shared costs and facilities lower total costs for the firm by lowering the TSLRIC for each individual service that shares the joint facilities. If firms know that they can recover the costs of those shared facilities (which costs, as shown above, are not captured in TSLRIC), then they have incentive to seek efficient, shared technologies. On the other hand, if joint costs are not recovered because prices are constrained in TSLRIC, the firm's incentive is to find technologies with low shared costs but higher incremental costs. Such technologies are less efficient, but if a firm is required to operate under these constraints, they are a rational response if the firm is to recover its costs. Hausman Aff. ¶ 11.

[*47*] (iii) The MCI and AT&T Models. The ex parte models presented to the Commission that advocate TSLRIC as a rate constraint are unrealistic and incorrect. In particular, the Hatfield model of TSLRIC pricing, submitted on behalf of MCI, would lead to massive under-recovery. As an initial matter, the study assumes that LECs provide services to entrants "in the ways the best available technology allows."[40] But a network is not rebuilt at each point in time to take advantage of improved technology. Instead, it is built bit by bit over time and encompasses multiple generations of technology. Although each investment decision may have been efficient and foresighted when made, the resulting network will not be identical to the one that could be built today if it were reconstructed under the best forward looking technology available.

As the Commission has explained, "where technological developments are reducing the costs of providing service, setting the price of discrete services equal to the forward-looking LRIC of each service is not likely to recover the historical, embedded costs of the network."[41] The Hatfield study wrongly suggests that "existing infrastructure . . . is irrelevant" and that the embedded costs of such infrastructure should not be recovered. Firms have [*48*] incurred substantial costs in building existing infrastructure and should not be saddled with ex-post regulatory revisions that bar prices that recover those legitimate costs.

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[40] Hatfield, Assocs., Inc., The Cost of Basic Network Elements: Theory Modeling and Policy Implications at 16 (Mar. 29, 1996) ("Hatfield study")

[41] Notice of Proposed Rulemaking, Interconnection Between Local Exchange Carriers and Commercial Mobile Radio Service Providers, CC Docket No. 95-185, FCC No. 95-505, ¶ 48 (released Jan. 11, 1996).

A rule that always reduces rates to the level achievable under the latest technology, as the Hatfield study recommends, will provide firms with strong incentives to underinvest and thereby cause losses in productive efficiency. Hausman Aff. ¶¶ 11-12. It will also be confiscatory and will produce an uncompensated taking of LECs' property. This is particularly important for small and mid-size companies that are still regulated under a rate-of-return regime. Those costs cannot suddenly and simply be ignored.

The Hatfield study acknowledges that its estimate of the total economic cost of unbundled network elements amounts to only 44% of the LECs' existing revenue requirements (at 35). The study furthermore concedes that the embedded costs of past investments not captured by TSLRIC amount to over $17 billion -- at least 20% of current revenue requirements -- and acknowledges that the model does not capture all of the LECs' actual overhead expenses (at 36, 43). These gaps indicate that TSLRIC-based prices will fail to capture anything close to total costs. The study glibly tries to explain away the gap with the unsupported assertion that the LECs are inefficient and with nonspecific collateral attacks on the Commission's policies and the past decisions of more than 50 regulatory agencies in thousands of proceedings. Such vague, after-the-fact attacks supply no basis for preventing the LECs from [*49*] recovering the embedded costs and overhead expenses of operating their networks.[42]

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[42] The Supreme Court has traditionally held that a utility should be compensated "for all prudent investments at their actual cost when made (their "historical" cost) irrespective of whether individual investments are deemed necessary or beneficial in hindsight"). Duquesne Light Co. v. Barasch, 488 U.S. at 309; see also Missouri ex rel. Southwestern Bell Tel. Co. v. Public Serv. Comm'n, 262 U.S. 276 (1923). See also Daniel F.

(continued...)

AT&T's proposal has similar flaws. AT&T acknowledges that "TSLRIC pricing of services that share fixed facilities may, under some circumstances, result in large-scale under-recovery of facilities costs." AT&T Ex Parte submission of 50 (FCC Mar. 21, 1996). AT&T accordingly proposes using the TSLRIC of adding an element or facility to the network instead of a service. Id. at 47-50. To the extent an element or facility supports multiple services, TSLRIC of that element or facility may capture more joint costs than TSLRIC calculated on a service basis. Nonetheless, AT&T does not dispute that its version of TSLRIC still leads to underrecovery of common and historical costs. Id. at 50.

In short, neither LRIC nor TSLRIC can provide an adequate level for prices set by the Commission. Rather, LRIC can serve only as a floor for rational, cost-based pricing. LRIC cannot be mandated. Even using LRIC as a floor, moreover, the Commission should not itself attempt to quantify LRIC for interconnection and unbundled network elements. Trying to establish LRIC for services across LECs based on a single cost study would fail to capture [*50*] differences in cost structures among firms or geographic regions and would lead to a contentious battle over which study to use. Such a straightjacket would be particularly hard on rural LECs and, in some instances, LECs eligible for the two percent waiver process under Section 251(f). Their costs vary markedly and are likely to be substantially higher. Thus, a ceiling approach is inappropriate for these LECs.

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[42] (...continued)
Spulber, Regulation and Markets 610 (1989) ("Perhaps the most important aspect of the regulatory bargain is the ability of regulators, customers, and the regulated firm to make commitments both to pricing policies and to irreversible investments").

(b) Rate Proxies.

Given the administrative difficulty of establishing rate guidelines based on formulas, the Commission has asked for comment on the alternative of setting rates by proxy. Proxies may, indeed, be a feasible way to establish presumptively valid rates for some unbundled elements. But the Commission needs to proceed with great care here in defining the elements and establishing the proxies to avoid arbitrage by interexchange carriers seeking to avoid paying access charges prior to general access charge reform. It is important, moreover, that any proxies not be established as rate ceilings; at most, they can serve to indicate levels below which rates will be presumptively valid and above which they must be further justified. Placing a rigid, proxy-based cap on rates will lead to undercompensation in some instances, depriving LECs of their legitimate right to cost recovery. It will also deprive state commissions of the regulatory flexibility guaranteed to them by the new Act and by Section 2(b) of the 1934 Act, which was not amended by Congress and which deprives the Commission of jurisdiction to set rates for intrastate services.

[*51*] Paragraph 139 of the NPRM suggests using interstate access charges, less CCLC and RIC, to measure certain rates. But the Commission has misconstrued the unbundling process if it believes that interstate switched access is an adequate proxy for all unbundled elements priced under Section 252(d)(1). In particular, unbundled local switching (i.e., the port concept described above) includes different functionalities from the local switching component of interstate switched access. As a proxy for unbundled local switching, the Commission would have to combine a number of elements from existing state and federal tariffs, with appropriate adjustments.

Switched access charges could be a proxy, if at all, only for the transport and termination of traffic under Section

252(d)(2). As explained below (pp. 58-66, infra), interexchange carriers should not, must not, be permitted to buy network unbundled elements as a substitute for access. Otherwise, interexchange carriers will have a strong incentive to avoid access charges by buying unbundled network elements and reconstructing access, particularly if both CCLC and RIC are excluded from the proxies for those unbundled elements.

CCLC and RIC reflect genuine costs incurred by LECs. Currently, these charges are born by interexchange carriers in the switched access charges the pay to LECs. If those charges are excluded from the rates paid by new entrants for unbundled elements, and the unbundled elements could be reconstructed to [*52*] replace access, then a significant danger of arbitrage would be created.

To avoid such arbitrage and treat all providers equally, the Commission should eventually move to a system in which all interconnectors -- IXCs, CMRS providers, CLECs, ESPs, etc. -- pay common prices for common services. But such a result will require a completion of access charge reform and a new model for ensuring universal service. Ideally, the Commission would complete those reforms at the same time that it completes this rulemaking. Since that appears impractical, however, the Commission has a fundamental choice to make in the meanwhile. It must either include CCLC and RIC in the prices paid by new entrants or it must rigidly police the boundaries between interexchange access and unbundled network elements. If it eschews the former but neglects the latter, then the LECs will be left with a huge shortfall as IXCs game the system to avoid paying access charges. Moreover, the IXCs, having gained their advantage through arbitrage, will then have little incentive to cooperate with access charge reform and universal service reform. What the Commission should do, in the meanwhile, is restrict the use of unbundled elements to the loops and ports and various forms

of dedicated transport needed to provide local service, not including anything corresponding to switched access for interexchange carriers. Switched access should be a proxy only for reciprocal compensation for the transport and termination of local traffic under Section 252(d)(2). And even that proxy should [*53*] include both CCLC and RIC until the Commission has completed its work on access reform and universal service.

With respect to true unbundled elements, the special access tariff for a voice grade local channel may, in at least some instances, provide a potentially useful proxy for an unbundled local loop.[43] An unbundled loop does not terminate at the LEC switch. Rather, it is provisioned and maintained in a manner that is more analogous to a special access dedicated line than to a regular switched exchange line. As far as the LEC's network is concerned, this is a non-switched facility. In appropriate circumstances, pricing of dedicated, nonswitched facilities at the current special access tariff has a number of advantages, such as preventing tariff shopping and permitting competitors to choose loops other than 2 wire voice grade channels.

Again, however, any such proxies have to be handled with care. Local loop costs will vary widely from area to area depending on population density and other factors. Indeed, some rural areas have monthly local loop costs approaching

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[43] Alternatively, the Commission has acknowledged (NPRM ¶ 141) that CCLC and SLC together recover the 25% of local loop costs. Proxies for unbundled looks could therefore be based on a multiple of the CCLC plus the SLC.

$100.[44] A grave threat [*54*] to universal service would be posed if the Commission established too low or too rigid a proxy for local loop costs.[45]

The Commission must also recognize that some unbundled elements (such as databases) have no counterparts in access charges. Here, the Commission should either eschew proxies altogether or, again, look to existing state and federal tariffs for appropriate analogues for these elements.

Special pricing rules are appropriate for rural LECs and those LECs that are eligible for the waiver process specified under Section 251(f). For some of these LECs it would especially logical and expedient to use current access charges, including flat-rated elements, to derive interim prices for interconnection and unbundled elements where possible. This would serve several purposes. First interconnection arrangements could be quickly negotiated since existing prices (i.e., access charges) would be in place. Small and mid-size incumbent LECs could otherwise be burdened with producing cost studies that could bog down the [*55*] interconnection

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[44] Comments of the United States Telephone Association, Federal-State Joint Board on Universal Service, CC Docket No. 96-45 (filed Apr. 12, 1996).

[45] The September 1995 Benchmark Cost Model (BCM) submitted to the Commission (for CC Docket No. 80-286) by MCI, NYNEX, Sprint and U.S. West does not provide an appropriate proxy for local loop costs. The BCM model was designed only to identify "high cost areas," not to provide an accurate estimate of the costs to serve each Census Block Group included in the model. The Hatfield version of that model is even more inappropriate because it is based on an idealized, optimal network that simply doesn't exist. It does not capture embedded costs and therefore has nothing to do with the real costs of LEC networks. The BCM model does, however, reinforce the fact that costs will differ substantially, census group by census group, depending on population densities.

negotiation process.[46] Second, migration in interconnection pricing would automatically track with changes in the access pricing regime. Finally the cost recovery contemplated by the 1996 Act is largely incorporated within current access prices.

(c) Other Issues.

USTA has already explained in detail why LECs should be permitted to include their embedded costs in the total costs to be recovered in charges for interconnection and unbundled elements. See supra pp. 40-43. The Commission seeks comment on the "empirical magnitude" of the embedded costs that would not be recouped if a solely forward-looking pricing methodology were used. A variety of estimates have been placed on these costs, ranging from $13 billion to as much as $18.4 billion. See, e.g., Mike Mills, Phone Firms Seek Higher Local Rates, Washington Post, A1 (May 7, 1996) ($13 billion); Hatfield study at 36 ($17.65 billion); AT&T, MCI, LDDS, WorldCom, Comtel, Interconnection, Unbundling and Access: Creating FullService Competition Under the Telecommunications Act of 1996 at 3 (Mar. 1996) ($18.4 billion).

Whatever the actual amount, these are perfectly legitimate embedded costs. They have been properly incurred pursuant to regulatory oversight, and regulators must permit them to be [*56*] recouped. Indeed, if the Commission does not permit the LECs to recover a proportionate share of such amounts in charges for interconnection and unbundling the embedded costs attributable to those services will have to be

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[46] Administrative convenience looms large for small and mid-size LECs since the volumes of interconnecting traffic and the demand for unbundled elements from such LECs is likely to be low, particularly at first, as new entrants target the larger and more lucrative urban areas. However, the option of producing cost studies should be left to their discretion.

recouped elsewhere. This would throw large amounts of costs onto the states and create pressure to raise local rates to permit full cost recovery by the LECs.

The Commission would thus place itself in an extremely vulnerable legal and political position if it does not permit the recovery of embedded costs under Sections 251 and 252. After supplanting the states' authority to determine just and reasonable rates under those sections, the Commission would then set rates that force the states to make up the shortfall elsewhere. If anything, those who purchase interconnection and unbundled access from the incumbent providers of last resort should make a contribution to universal service (along with paying the total costs of what they are buying), see § 254(b)(4); such carriers certainly should not themselves obtain a subsidy (by paying less than total costs) which detracts from universal service by forcing an increase in local rates.

(4) Rate Structures.

Within the rate-setting guidelines established by the Commission, the particular structure of rates should be left to private negotiation and state review. The Commission should not prescribe restrictive rules narrowly specifying the structure of rates for particular network elements. Among other things, such rules might interfere with the ability of parties to tailor [*57*] interconnection packages to particular entrants' needs.

FEDERAL IMPLEMENTATION OF THE TELECOMMUNICATIONS ACT OF 1996: COMPETITION IN THE LOCAL EXCHANGE

A Report by Robert G. Harris and Dennis A. Yao

May 16, 1996

Prepared for US WEST, Inc.
CC Docket No. 96-98

A. INTRODUCTION AND EXECUTIVE SUMMARY

The ultimate goal of the Telecommunications Act of 1996 is to ensure a wide range of high quality, low-cost readily available, technically advanced telecommunications services for American consumers, business enterprises, schools, hospitals, government agencies and non-profit organizations. This goal can only be achieved by promoting investment and continuous technological progress in the nation's communications infrastructure: it can not be achieved merely by allowing competitors to buy existing network facilities on an unbundled basis or by reselling existing services bought from local exchange carriers on a wholesale basis. It is therefore imperative that the Commission adopt rules in this proceeding that promote efficient competition; facilitate the innovation, deployment and adoption of new technologies and services; and provide adequate incentives for expanding investment in the nation's telecommunications and information infrastructure. Conversely, it would be directly contrary to these policy objectives for the Commission to adopt policies that encourage inefficient entry, distort the competitive process by creating or enlarging artificial advantages of some competitors, or reduce the incentives for innovation and investment by incumbent and potential new service providers.

The appropriate policies for the transition to full competition should recognize the important role that U S WEST and other LECs will continue to play in that transition. Over the past decade, investments by local exchange carriers have been essential to the development of competition in interexchange services. For example, without substantial investments in improved switching capabilities, there would have been no "equal access" for IXCs. To promote equal access, this Commission specifically adopted policies that provided the stream of revenues required to fund those

investments. The Commission should not adopt policies requiring enormous investments by LECs, without ensuring the recovery of the revenues needed to cover the costs of those investments. For an interim period of several years, U S WEST and other LECs will provide key ingredients to the "network of networks," including a means of interconnection and interoperability across the rapidly growing number of competing and cooperating communications networks. Provision of these ingredients and continued investments [*2*] in the existing public telecommunications network will require enormous expenditures. Thus, it is crucial to the nation's interest in the communications infrastructure and in competition that U S WEST be allowed to compete on even terms.

As a matter of first principle, then, the Commission's rules should promote allocative, technical and dynamic efficiency. At all costs, the Commission should avoid policies that may create the <u>appearance</u> of competition - e.g., by increasing the number of competitors in local exchange services - but that, in the long run, actually inhibit <u>real</u> competition by creating conditions that ensure the success of a few large firms at the expense of many other potential competitors. Given the history of this industry, it is especially important that the Commission's rules do not recreate an industry in which one firm, such as AT&T, is allowed to dominate the marketplace. Yet, if the Commission were to adopt the policies advocated by AT&T, that would surely be the result. For example, if the Commission mandates that incumbents set the wholesale price of local exchange service below its full economic cost, as AT&T proposes, it runs the very real risk of creating an environment in which AT&T will dominate local exchange markets. Instead, the Commission should pay careful attention to the likely effects of its rules on the structure of future local exchange and other telecommunications markets, as these

markets will be powerfully influenced by the results of this proceeding.

It is critically important that the FCC's rules not distort competitive dynamics by favoring one class of competitor or one type of technology over others. With business units operating as (1) an incumbent LEC, (2) facilities-based new entrants (i.e., its cable companies), and (3) a wireless service provider in different jurisdictions, U S WEST has a particularly strong incentive to favor balanced competition so that its individual constituents can compete for local exchange business on their respective merits. Hence, U S WEST opposes policies that are biased in favor of either incumbents or entrants. A significant danger is that policies will be biased in favor of entrants, i.e., policies that promote "biased competition," but inhibit the development of efficient competition. To take one historical example, in surface freight transportation, regulatory policies greatly inhibited railroads from competing with motor carriers. Those policies caused enormous [*3*] inefficiencies and competitive distortions and literally drove many railroads into the ground. Only when many rail carriers were in bankruptcy did Congress and the Interstate Commerce Commission finally free the railroads from regulatory policies that had prevented them from competing with other modes of transportation. We certainly hope that the nation does not follow a similar path in telecommunications.

The Commission can increase the probability of success in local exchange competition by adopting the minimal set of rules necessary to ensure nondiscriminatory interconnection to the public switched network. Public policy remedies should be narrowly tailored to ameliorate the underlying economic problem they intend to address. The approach of tailoring the remedy to the problem is applied in antitrust and consumer protection law and policy, thereby avoiding unanticipated distortions in the market. By limiting its rules to those required

to establish conditions that will allow fair competition to flourish for the benefit of consumers, the Commission will enable an expansion of voluntary choices based on buyers and sellers negotiating and transacting in markets, rather than on regulatory imperatives and restrictions.

In so doing, the Commission should recall the central role of prices in a market economy. If the prices of telecommunications services - whether at the retail or wholesale level, of unbundled or bundled services - do not cover their full economic costs, neither incumbent LECs nor existing competitors nor potential new entrants will have ANY incentive to invest in network facilities. It is well understood that competition promotes efficiency by driving prices toward costs; it is worth noting, though, that efficient competition will not develop and cannot succeed if some firms are required to sell outputs at prices that are below cost. Thus, whatever rules are adopted to determine wholesale, network element and interconnection prices, it is imperative that those prices be based on the full economic costs associated with providing each service. Economically incorrect pricing will reduce or distort investment in new technologies and systems and bias customer choices.

In addition to economically rational pricing, promoting the nation's interest in advanced telecommunications services requires policies that provide incentives and rewards for innovation. [*4*] The Commission should establish clear ground rules for determining which services should be proprietary and therefore not subject to mandatory wholesale/resale requirements. Competitive players in telecommunications markets must be able to protect their innovations through patents, copyrights, trademarks and similar mechanisms, otherwise incentives for the investment in and development of innovative telecommunications services will be stifled.

Finally, the Commission, in establishing interconnection and competition policies, should recognize that it will be constrained in its ability to correct errors caused by "interim" policies. Public policies become treated as "entitlements." It should be assumed that policies intended to be transitional will become semi-permanent and difficult to modify. Experience suggests that there is a reasonably high likelihood that a policy designed to be transitory will outlive its value and ultimately may interfere with the original policy goals. One way to prevent this from occurring is by adopting policies now that are adaptive, self-correcting and market-based.

These are the issues addressed in this report. In Section B, we outline the contours of the current conditions in local exchange services. Assuming nondiscriminatory access to call termination, we note that the major barrier to efficient competition in local exchange services is not the market power of incumbents, but the regulatory obligations and restrictions imposed on the incumbents. In other markets, policy makers would be suspicious that prices set below costs were predatory and prices set well above costs constituted "monopoly" overcharges. Yet, in local telephone services, such pricing is seen as a virtue and is, in any case, compelled by current rate regulations.

We also distinguish, in Section B, the three main forms of entry into local exchange services: facilities-based (i.e., the entrant invests substantially in its own network); partial facilities-based (the entrant invests in its own network but also rents the use of unbundled network elements from facilities-based carriers); and resale (the entrant resells services purchased from a facilities-based carrier). We caution that while policies that enable entrants to rent unbundled network elements or resell the services of facilities-based carriers can promote competition, such policies can also [*5*] inhibit the

development of facilities-based competition by distorting entrants' "make or buy" decisions.

Section C addresses specific policy issues raised by the NPRM and offers comments on the policy choices facing the Commission and state regulatory authorities. We explain why only call termination, not other interconnection services such as transport and tandem switching, should be governed by the Commission. We iterate one of the most fundamental propositions of economics: that the prices of goods and services- including those designated as essential facilities or services - should be priced to recover their full economic costs. Thus, LEC prices should reflect the total service long run incremental cost (TSLRIC), shared and common costs, a reasonable profit, and, during a transition period, embedded costs. *Any costing standards or methodology used to set prices must, therefore, when applied to the entirety of US WEST's services, give US WEST an opportunity to recover its total costs.*

That principle should be consistently applied in telecommunications, in the pricing of retail local exchange services, in the wholesale pricing of local exchange servicing, in the pricing of unbundled network elements, and in the pricing of call termination. We further show why, given the complexities and alternative means of interconnection, no system of tariffed prices can possibly reflect all of the myriad variations in interconnection arrangements. Hence, private negotiations among the parties are the only conceivable method of achieving rational, efficient interconnection.

In Section D, we begin with a discussion of the interplay between telecommunications policies, the strategies of competitors and the likelihood of success in telecommunications markets. Our point is this: whether or not the Commission intends for its rules to affect competition dynamics - who wins and who loses - its rules surely will have

that effect. Recognizing that fact, the Commission should strive for policies that are competitively neutral, that allow competitors to succeed on their relative merits, and that do not magnify the inherent advantages of major players such as AT&T to make competitive survival difficult for the diversity of other potential players. [*6*]

To analyze the probable effects of alternative policy regimes, we construct and contrast the probable outcomes of two very different policy scenarios. In the "biased competition scenario," we assume that the LECs' retail prices are not restructured; wholesale prices are set below the cost of local exchange service (because they are established by discounts off of below-cost retail prices); excessive unbundling is required, with inadequate compensation to LECs for the cost of unbundling; and call termination and/or unbundled network elements are priced at or below incremental cost (e.g., by requiring "bill and keep"). The "efficient competition scenario" assumes instead the rapid adoption of economically rational retail pricing of exchange services through rate rebalancing; and prices of call termination, unbundled network elements and wholesale local exchange service cover full economic costs, reflect variations in costs, and enable LECs to earn a reasonable profit.

The expected outcomes of these two scenarios are quite different. By stressing unbundling and reselling over investment in facilities, policies that bias competition amplify the existing advantages of the major IXCs, facilitating their entry into local exchange services based on brand name and established customer bases. Customers' switching costs increase, reducing the vigor of price competition. Entry by smaller players is made more difficult, now and in the future. Investment in marketing and advertising is encouraged and rewarded, investment in new technologies, new services and local exchange facilities are discouraged.

Policies that promote efficient competition, in contrast, are likely to increase the dynamics of competition and the diversity of competitors. Efficient entry and innovation in technology and services are rewarded. The source of market success - and thus the grounds of competition - lie less in marketing than in offering better services at lower prices. Resale and unbundling would serve as complements to - rather than substitutes for - facilities-based competition. Hence, policies that promote efficient competition will promote investment in the nation's telecommunications infrastructure by the most efficient service providers. The Commission should be careful that the environment created by its final local competition rules emulates the [*7*] "efficient competition scenario" and not the "biased competition scenario" suggested by some provisions in the NPRM.

REPLY AFFIDAVIT OF WILLIAM J. BAUMOL, JANUSZ A. ORDOVER, AND ROBERT D. WILLIG

1. We are pleased to note that the ILECs' economist affiants take positions that make convergence among our views possible. As Dr. Crandall puts the most fundamental point, "From an economic standpoint, the pricing of any network function, whether for termination, interconnection, or any other purpose, should be based on long-run incremental costs." Crandall, p. 11. Drs. Beauvais, Harris & Yao, and Hausman also acknowledge, to varying degrees, the soundness of basing prices on TSLRIC. Beauvais, pp. 2-4; Harris & Yao, p. 5; Hausman, pp. 2 & 3. These economists, however, raise several issues that urgently require further exploration, because if not cleared up, they can lead to policy measures that impede competition and economic efficiency. We comment on each of these matters in turn.

I. TSLRIC-BASED PRICING IS FULLY COMPENSATORY.

2. The ILECs' affiants contend that "pure" TSLRIC pricing, by excluding costs that are common to or shared by multiple network elements, would prevent full recovery of forward-looking costs and discourage efficient make-or-buy decisions. Beauvais, pp. 4, 7, 9-13; Harris & Yao, p. 18; Hausman, pp. 4-5. Neither we nor AT&T have proposed LRIC or "pure" TSLRIC (e.g., ignoring shared and common costs) pricing at the individual network element level, however. Although we are skeptical that significant common or shared costs exist, we agree that prices for individual network elements should permit the recovery of any significant forward-looking, efficient shared or common costs incurred in providing network elements, subject to a stand-alone cost ("SAC") ceiling and an

imputation rule. These constraints allow ILECs to recover *all* of the costs that a competitive market would allow efficient firms to recover.

[*2*] 3. Drs. Harris, Yao and Hausman also contend that prices above TSLRIC are necessary to permit full recovery of future investment by ILECs in the face of technological change and obsolescence. Harris & Yao, p. 19; Hausman, pp. 6-7 & n. 4. This contention betrays unwarranted pessimism about TSLRIC pricing and the performance of competitive markets. The semiconductor, disk drive, fiber optic, and telecommunications equipment industries are only a few of the many capital-intensive industries in which intensely competitive prices have coexisted with rapid innovation. Prices in competitive markets reflect the forward-looking costs of the most efficient technology that is *generally available*, not experimental prototypes and proprietary initiatives to outdo rivals. The impetus for an individual firm to adopt an innovation is the prospect of above-average returns, however temporary, from bettering generally available technology. While the payoff from an innovation erodes with its diffusion over time, a competitive market provides a stream of revenue that is exactly sufficient to recoup the necessary investment over the economic lifetime of the pertinent assets if the actual rate of technological change (and other market conditions)

match expectations.[1] The value of that revenue stream equals TSLRIC - - not TSLRIC-plus-a-markup.[2]

[*3*]

II. EMBEDDED COST ADDITIVES ARE UNJUSTIFIED.

4. Some affiants argue that prices for network elements should be permitted to exceed TSLRIC by a margin wide enough to provide full "recovery of the embedded costs incurred to meet regulatory service obligations" in the past. They suggest that such a recovery is required by an implicit regulatory bargain or compact between the ILECs and their regulators that stems from the failure of past depreciation charges to keep pace with the diminution over time of the present value of the expected income stream from the ILECs' existing assets. Breaching such a bargain, the ILECs argue, would discourage them from making efficient levels of

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[1] *See, e.g.*, William J. Baumol, "Optimal Depreciation Policy: Pricing the Products of Durable Assets," 2 *Bell J. of Economics and Management Science* 365-76 (Autumn 1971). Unexpectedly fast or slow technological change, like any other after-the-fact departure from expected market conditions, can cause the actual return on any particular investment to exceed or fall short of expectations. On average over time, however, actual returns on investment should closely approximate expected returns.

[2] Dr. Hausman's further claim that TSLRIC pricing would deny ILECs a "reasonable profit" because "fixed and sunk" costs incurred in the future "will not be counted in the forward looking costs of a LRIC study" (Hausman, pp. 7-8) confuses short run and long run costs. TSLRIC, as its name indicates, is a long-run cost measure: it assumes a time period long enough so that all sunk investment must be replaced. The cost of efficient additional investment in long-lived assets needed to produce network elements is properly included in TSLRIC *even if some or all of the investment will become sunk once put in place.*

investment in the future. Harris & Yao, p. 20; Hausman, pp. 4-6.

5. As an initial matter, the suggestion that levels of stranded plant could ever be measured simply by comparing the ILECs' current accounting cost-based revenue requirements with the TSLRIC of providing unbundled network elements is plainly wrong. There are any number of reasons why those figures would diverge. Most fundamentally, for example, large portions of the difference may reflect the very inefficiencies, overearnings, cross-subsidies, and imprudent investments that the competitive market model is designed to drive out. To allow concern over the ILECs' prospective inability to recover such "costs" to prevent or delay efficient pricing would be anticompetitive, inefficient, and contrary to the spirit of the 1996 Act. Thus, even if a regulatory bargain were pertinent here, the costs at issue would be limited to the costs in investments that (1) were prudently made and necessary to provide the network elements at issue, (2) have not been depreciated as rapidly as warranted by the diminution in the earning power of the assets, and (3) cannot be mitigated.

6. The ILECs have not shown that these conditions hold. Indeed, the empirical analysis reported by AT&T witnesses Selwyn and Kravtin indicates that any such costs of obsolescence [*4*] are small. *See* Reply Affidavit of Selwyn and Kravtin.

7. We also understand that existing ILEC networks have been greatly overbuilt for present or foreseeable demand for narrowband telecommunications services, and that much if not most of the extra investment was made to anticipate future demand for video dial tone and other enhanced services. (Selwyn and Kravtin discuss this evidence in their separate

affidavit.) If so, the extra costs of the investments should not be reflected in the prices for the network elements, which would constitute a cross subsidy provided to those other services that were the impetus for the extra investment. Rather, the costs should be covered in the prices for those other services that led to the extra investment (if and when those services are actually offered).[3]

8. In any event, it is hard to see how the regulatory compact theory would apply here, for little if any of the embedded investment now on the ILECs books could have been made in reasonable reliance on the long term survival of original cost ratemaking. According to Drs. Selwyn and Kravtin, most of the ILEC rate base reflects investments made during the 1990s, when price cap regulation had largely supplanted original cost regulation for the major ILECs. Price cap regulation creates neither a ceiling on earnings nor a

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[3] There are two possibilities. This extra investment may represent waste and inefficiency. If so, there is no legitimate competitive or regulatory basis for its recovery from prices charged for unbundled network elements. Alternatively, the extra investment may be efficient for the provision of some set of offerings that includes the regulated local exchange services, but that also includes some significant forthcoming additional services that will require expanded functionalities. If so, then the extra investment should not in any way add to the levels of the prices charged for the unbundled network elements that relate to the traditional regulated local exchange services. On the contrary, the pertinent TSLRIC is the cost of the network element that underlies the regulated local exchange service, as an *increment* relative to the expanded set of services. Because of economics of scope, this TSLRIC must be less than the cost of the network element alone, with no expanded set of services. Thus, inasmuch as the Hatfield TSLRIC of a network element, for example, is calculated without reference to and without combination with expanded services, it is a conservative estimate -- the true figure that reflects economics of scope with expanded services would be *lower*.

guarantee of recoupment.

[*5*]

III. ADOPTION OF TSLRIC PRICING SHOULD NOT AWAIT REFORM OF END-USER PRICES.

9. The ILECs argue that implementation of TSLRIC pricing of network elements is premature and should be postponed until reform of the price structure for end-user services. Until the cross-subsidies and other anomalies in the end-user rate structure are eliminated, the ILECs reason, TSLRIC pricing for network elements would result in widespread cream-skimming and arbitrage to the ILECs' detriment (but to consumers' benefit). Crandall, pp. 10-11; Harris & Yao, pp. 8-10, 23, 26-30; Hausman, pp. 2 and 4.

10. We fully agree that, without a competitively-neutral distribution and funding mechanism for the subsidized end-user services, economic pricing of network elements, like facilities-based entry, would undermine the stability of cross-subsidies and anticompetitive distortions in the existing end-use rate structure. But the 1996 Act provides a mechanism to counteract this - - the universal service fund. Its use enables the subsidy of universal service (or any other service that regulators elect to subsidize) to coexist with economic pricing of network elements.

11. Further, delay of TSLRIC pricing to preserve cross-subsidies that regulators do *not* elect to fund in a competitively neutral manner approaches the matter in a way that is completely backwards. The quickest and surest way to reform end-user rates is to open the door to the competition that would ensue from TSLRIC pricing of unbundled network elements. No cross-subsidy can long survive effective competition, which

automatically drives down the prices of overpriced services and thereby cuts off the source of financing of the nonremunerative services that are the recipients of cross subsidy.

12. In contrast, deferring TSLRIC pricing until end-user prices are fully reformed can delay pricing reform indefinitely. The 1996 Act requires freedom of competition, and assigns [*6*] the FCC responsibility for articulating principles that will promote, not impede it. If Drs. Hausman and Crandall really favor full and effective competition in the local arena, then they simply cannot proceed on the premise that distorted prices are here to stay, for that can become a self-fulfilling prophecy.

IV. ISSUES IN ESTIMATING TSLRIC

A. The Commission Should Not Limit TSLRIC Studies to Existing Network Architecture.

13. Dr. Crandall urges the Commission to forbid any use of TSLRIC studies based on network configurations and engineering assumptions that vary from existing ILEC networks, because studies based on optimal configurations, he asserts, would be too "arbitrary" and "hypothetical." Crandall ¶¶ 14-15, 20. This is unfounded. There undoubtedly will be instances when reliable evidence of a better alternative to existing network configurations and technology is lacking. But the logical response to such uncertainties is to use a best evidence standard: accept engineering assumptions that depart from existing ILEC engineering where the assumption are reliable; otherwise accept existing network engineering as the best available proxy for the optimal design.

14. Both the Hatfield model and Surface Transportation Board have adopted this approach to estimating forward-looking costs. Their experience, and the experience of states

with TSLRIC pricing, refute the notion that estimating forward-looking costs, based on engineering models of efficient network design and technology, is impractical.[4] Arbitrarily limiting TSLRIC [*7*] studies to historical network architecture and engineering would create havens for inefficiency and deprive consumers of the full benefits of competition.[5]

B. Forward-Looking Capital Costs

15. Drs. Crandall, Harris and Yao argue that the business risk by ILECs under the proposed regulatory regime will be "markedly" higher than the risk they have historically faced, and that the cost of capital included in TSLRIC must be correspondingly higher than pre-1996 capital costs. Crandall, pp. 9-10; Harris & Yao, pp. 21-22. Two responses are warranted. First, increased competitive risk is most likely to arise at the retail, not carrier-to-carrier level. Indeed, TSLRIC-

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[4] *All* cost-based ratemaking standards (including embedded cost ratemaking) involve hypothetical constructs. As Alfred Kahn has noted, "any system of pricing involves the exercise of judgment. The question is whether that judgment should be employed in order best to apply economically efficient principles or irrational principles. . . . An approximation, even one subject to a wide margin of error, to the correct answer is better than the wrong answer worked out to seven decimal places." Kahn, *The Economics of Regulation*, vol. 1, pp. 198-99.

[5] Dr. Crandall's rhetorical contrast between "actual" (i.e., embedded) costs and "hypothetical" (i.e., prospective) costs (Crandall, pp. 8-9) has it backwards. Prospective costs *are* actual costs - - the actual costs of providing service with today's technology, prices, and know-how. Historic costs, in contrast, are *yesterday's* actual costs. Even more important, the process of *allocating* historical costs - - a crucial link in embedded cost ratemaking - - is intrinsically arbitrary. However the costs are allocated, the resulting numbers have zero economic content. In no economic sense may such costs be regarded as "actual" costs.

based prices for network elements should *reduce* the risk of inefficient competitive bypass of the ILEC's networks. Second, Selwyn and Kravtin point out that the bulk of the RBOCs' investment base has been installed since 1990, when the prospect for competitive incursions into the ILECs' markets was increasingly apparent. The ILECs' willingness to make these investments is evidence that they have regarded the current structure of returns as adequate to compensate for the competitive risks anticipated over the life of the new assets.[6]

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[6] USTA, citing Dr. Hausman, asserts that the "reasonable profit" contemplated by the 1996 Act requires a return on investment *in excess of* an ILEC's cost of capital (USTA Comments, p. 43). USTA's position is unsupported by the cited portions of Dr. Hausman's testimony (Hausman, ¶¶ 12-13), or the views of any reputable economist known to us. "Reasonable profit," to economists, is a return on investment exactly equal to - - and not exceeding - - the firm's cost of capital. "Reasonable profit," or zero economic profit, is the return on investment permitted over the long run in competitive markets, and is the cost of capital built into TSLRIC. Contrary to USTA's assumption, competitive markets not only induce investors to "risk their capital in building new plants and facilities," but encourage optimal levels of such investment.

AFFIDAVIT OF LEE L. SELWYN AND PATRICIA D. KRAVTIN

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[*2*] Findings of the ETI Study

3. In response to these arguments from the ILECs and USTA expert Hausman, we present specific empirical evidence from an ETI Study entitled *Analysis of Incumbent LEC Embedded Investment: An Empirical Perspective on the "Gap" Between Historic Costs and Forward-looking TSLRIC* ("ETI Study"), which appears as Attachment C to this affidavit. In particular, the ETI Study examines critically the notion, implicit in the arguments raised by the ILECs, that their books reflect a relatively large base of old, obsolete plant, acquired under pre-competitive conditions at a high cost relative to current prices, which the ILECs assert explains the divergence between ILEC accounting books and TSLRIC.

4. Although ETI's empirical analysis was necessarily constrained by the limited availability of ILEC data, we nevertheless find that, as a general proposition and contrary to ILEC claims and other "conventional wisdom," the existence of a "gap" between historical embedded costs and TSLRIC results *cannot* be ascribed to the obsolescence or (relative to current prices) high cost of plant put in place to satisfy basic service demand as part of any explicit or implicit pre-competition regulatory bargain imposed upon the ILECs. Rather, a primary driver of ILEC plant additions and retirements over the past few years was related to and motivated by the ILECs' pursuit of other strategic business goals and positioning for entry into new lines of business.

5. As described further below, the analyses presented in the ETI Study provide specific empirical evidence demonstrating that:

- The majority of plant carried on the ILECs' books is relatively new, having been acquired during the 1990s – a time period in which fundamental regulatory changes, competitive inroads, and corresponding strategic responses were clearly being contemplated and addressed by the ILECs:

- [*3*] In the aggregate, newer vintage plant is replacing the older vintages at the steady pace of approximately 5%-10% per year, such that the next several years, during the transition to a more competitive local exchange market environment, the ILECs will have replaced or retired virtually all categories of their pre-1990 embedded base of plant that has become economically and/or technologically obsolete;

- Of the plant acquired since January 1, 1990 that now constitutes the majority of the ILECs' net rate base, only a relatively small fraction of the gross additions in digital switching and outside plant distribution facilities can be shown to have been required to support growth in basic service demand over this period;

- A large portion of the older (i.e., pre-1990) vintage plant remaining on the ILECs' books consists of physical assets whose economic values may have actually appreciated, in that similar plant is still being acquired at reproduction costs (such as those reflected in TSLRIC studies) that in many cases are likely to be *greater* than the original (historic) acquisition cost.

6. In addition, the ETI Study also examines several case studies and other anecdotal evidence that further supports and expounds upon the conclusions of the quantitative empirical analyses. These include:

- ILEC involvement in the market for advanced Centrex-type services which, unlike POTS services, required the use of digital (as distinct from analog) central office switches, may have motivated the unnecessarily early replacement of analog central office switching plant and the massive overconstruction of outside plant;

- ILEC efforts to expand the market for additional residential lines and other discretionary services, required the ILECs to design and construct far more extensive feeder and distribution infrastructures (and expend far greater aggregate capital investments) than otherwise would have been required to provision basic local [*4*] exchange service, and appears to overwhelm simple growth in basic local exchange line demand as a principal capital investment driver; and

DECLARATION OF ALFRED E. KHAN AND TIMOTHY J. TARDIFF

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II. EFFICIENT PRICING OF INPUTS MUST RECOVER MORE THAN TSLRIC-- AND TSLRIC MUST BE CORRECTLY DEFINED

4. Some parties here–notably the interexchange carriers and some competitive LECs (CLECs)–have flatly asserted that the rates for inputs provided by the LECs to other carriers should recover only "direct economic cost," which they equate to total service long-run incremental cost, or TSLRIC. These parties generally define TSLRIC as the total ongoing and future costs that would have to be incurred to provide a given service or network element using a hypothetical network that might be constructed today by a carrier starting with a completely blank slate (which we will therefore refer to as TSLRIC-BS). In view of their contention also the prices equal to TSLRIC already "include a reasonable profit," it is clear that they would permit no contribution over and above TSLRIC to be included in the rates for unbundled [*2*] network elements and terminations. In our view, that position is incorrect both on purely economic grounds and, in the present situation, in terms of good regulatory policy.

5. The failure to include contribution above TSLRIC-BS would exclude from recovery at least four other categories of costs:

a. Ongoing costs or burdens asymmetrically borne by the LECs but not their challengers by virtue of such public utility obligations as providing services--particularly basic telephone service to residential customers and particularly in rural

areas--at rates below economically efficient levels, the consequent revenue deficiencies of which have heretofore been made good by contributions incorporated in prices of such services as interexchange access, toll and vertical services such as local usage and custom calling;

b. ongoing costs of the LECs to the extent their actual, prudently incurred incremental costs of providing individual services or unbundled network elements exceed those of a hypothetical network;

c. ongoing fixed and common costs, including overheads, such as, in industries characterized by widespread economies of scale and scope, efficient competitors must recover in charges above incremental costs if they are to continue in business; and

d. sunk costs, taking the form of a return on and of assets whose costs have not yet been fully recovered.

6. The ongoing costs of ubiquity. The Commission requires no reminder of the first of these cases for permitting LECs to incorporate a markup above incremental costs in their charges to competitors for use of their essential facilities. It has historically clearly recognized the underpricing of basic residential service and corresponding overpricing of such services as interexchange access and toll, which it took a substantial step to redress by imposing the subscriber line charge on end-users. And it has also recognized that so long as these rates are not fully rebalanced those distorted charges justify incorporation of a markup (such as its own [*3*] carrier common line charges) in the LECs' switched carrier access

charges--a case applicable equally to their charges for unbundled network elements.[1]

7. The parity of the cases for incorporating a contribution in the LECs' charges for the basic network elements, on the one side, and (interexchange carrier) access, on the other, is not one of logic alone; the two are inextricably linked functionally as well. If there is continued legitimacy in incorporating a markup in the latter charge--and we believe there is until the LECs' prices can be fully rebalanced to recover any necessary contribution currently provided by access charges and other rates--it becomes essential to incorporate it also in the charge for network inputs. Otherwise, the IXCs could readily bypass the FCC-legitimized carrier access charges by buying all the requisite network inputs at incremental cost, in this way bypassing the LECs' initiation and termination of interexchange calls.

8. The basic fallacy of the proposed TSLRIC-BS standard. Some commentors have insisted that the proper basis for the pricing of LEC services sold to competitors (and also for calculating any required universal service subsidies) is the TSLRIC--the total forward-looking cost of a hypothetical, ideally efficient system built by either the incumbent or some other carrier starting with a blank slate, using the most efficient current technology. In our judgment, the only correct basis is the TSLRIC of the incumbent telephone companies themselves. This is for so the following reasons:

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[1] Presumably this deficiency in basic residential service rates could be made good by the constitution of a separately-financed universal service fund; but as the NPRM recognizes, the later statutorily-scheduled completion of the universal service reform proceeding clearly suggests, as we would strongly affirm, the legitimacy of the LEC's continuing to recover the requisite contribution in their charges for inputs during the transition period (par. 145).

a. The rationale of its proponents is that TSLRIC-BS is the level to which competition would drive prices. They are mistaken. In a world of continuous technological progress, it would be irrational for firms constantly to update their facilities in order completely to incorporate today's lowest-cost technology, as though starting from scratch: investments made today, totally embodying today's most modern technology, would instantaneously be outdated tomorrow and, in consequence, never earn a return sufficient to justify the investments [*4*] in the first place. For this reason, as Professor William J. Fellner pointed out many years ago,[2] firms even in competitive industries would systematically practice what he calls "anticipatory retardation," adopting the most modern technology only when the progressively declining real costs had fallen sufficiently below currently prevailing prices as to offer them a reasonable expectation of earning a return on those investments over their entire economic life. In consequence even perfectly competitive prices would not be set at the level of these (totally) current costs--unless, to put it another way, the calculated costs of the new plan included an extremely high rate of return and of depreciation, in reflection of the exposure of any such investments to costs and prices progressively declining in real terms over their life.

b. The Commission is not writing on a blank slate. The LECs already have a ubiquitous network serving their entire franchise territories and are constantly providing service to new customers within those territories. The economic purpose of having prices set at incremental cost is to inform buyers--and make them pay--the cost that society will actually

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[2] William J. Fellner, "The Influence of Market Structure on Technological Progress," in Amer. Econ. Ass'n. *Readings in Industrial Organization and Public Policy* (Homewood: Richard D. Irwin, 1958), as described also in Kahn, *The Economics of Regulation*, Vol. 1, pp. 199-20, note 91.

incur or would actually save in these several circumstances: these can only be the costs of the supplier whose prices are being set.

c. The proponents of the TSLRIC-BS standard clearly imply that it will provide a cost basis for LEC charges lower than their own TSLRICs--that is, that the latter costs embody inefficiencies that would be avoided by a hypothetical totally new network. We have already cited reasons for doubting that inference: indeed, if that factual premise of the TSLRIC-BS proponents were valid, efficiency would require that the incumbent company be totally replaced, instantaneously, by a wholly new venture or scrap its entire existing plant and start over from the ground up. For this very reason, considerations of economic efficiency require that the prices charged to competitors be based upon the LECs' actual costs; to the extent competitors can provide these inputs more efficiently than the LECs, this will fully preserve their incentive to do so and thereby promote efficient facilities-based entry. In any event, it has always been their actual costs that the incumbent LECs have traditionally been entitled to [*5*] recover--if not fully in rates for underpriced services, then in the regulatorily-approved inefficiently high rates for other services, including carrier access. And where states have moved from rate base/rate of return to price cap regulation, they have typically set the initial caps and indexation formulas in such a way as to give the regulated companies a fair opportunity to recover their actual prudently incurred costs, provided they achieve the productivity goals implicit or explicit in the indexation formulas.

d. Proponents of the TSLRIC-BS standard contend that basing prices and revenue recoveries on the actual TSLRICs of the incumbent LECs imposes on consumers the costs of inefficient existing network configurations and operations. As critics of traditional cost-plus regulation, we

cannot deny the likelihood of inefficiencies under such schemes. On the other hand, assertions about their existence by critics of the LECs (1) are pure assertion; (2) ignore the fact that in the majority of states the LECs are now subject to price cap regulation--and have been for some five years in the federal jurisdiction--which has given them strong incentives to improve their efficiency; and (3) in any event, if, in departure from past regulatory practice, costs are to be disallowed on grounds of inefficiency, it surely would be up to the state regulators to do so.

e. Finally, it is prices based on the actual incremental costs of the incumbent LEC that are the proper target for comparison by rivals contemplating entering the market. If, as its proponents seem to assume, the TSLRIC-BS were lower than the TSLRIC of the incumbent LEC, basing the LEC's charge for network elements--below its own costs--on the former measure would offer rivals a smaller reward for deploying their own facilities than the superiority of their costs would justify. If, instead, the TSLRIC of the incumbent LEC were lower than TSLRIC-BS (correctly measured, as we have explained, to take into account future obsolescence), then LEC charges based on the latter measure would overcompensate entrants--that is to say, would encourage entry of firms imposing incremental costs on society greater than are imposed by the incumbent suppliers.

9. The recovery of joint, common and overhead costs. The Commission explicitly recognizes the third possible justification we have listed for incorporating a markup in these several charges for unbundled elements and call terminations--the fact that in industries characterized by ubiquitous economies of scope and scale, giving rise to costs common to or [*6*] shared by a variety of services or products, prices for each of them set at bare incremental cost will in the aggregate fail to

recover total costs, even when the latter are defined in purely economic (ongoing and future) terms (par. 129).

10. AT&T purports to refute this case for a markup above incremental cost by asserting that such network elements as loops, switching, transport and signaling are discrete physical elements of local networks, which, if costed separately, would leave "few if any shared facilities costs" that would not be recovered in their TSLRIC prices. That is to say, without denying that charges for such end services as toll or local calling at bare incremental costs would fail to recover such costs common to those two services as switching and transport–the sharing of which among such services is the primary source of economies of scope–AT&T is saying that there are virtually no such costs shared by the several network elements that LECs would be required under the new law to offer and therefore no problem of charges at bare TSLRIC failing to recover them. We are not in a position to appraise that factual contention; but we point out that even if it is correct, it fails to respond to the (a) undeniable presence of economies of scope among the LECs' own retail services; (b) the necessity of their recovering those costs–confining our attention to strict economic costs–via varying markups above incremental costs in their charges for those services–just as AT&T does itself[3] and (c) the certainty that if competitors such

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[3] AT&T uses its network to produce and sell services to high- and low-volume users of long-distance service. The latter pay rates several times incremental cost; large users pay rates much closer to incremental cost. AT&T recovers the costs shared across these services (low and high volume customers) on the basis of what the respective markets will bear. This example directly contradicts the assertion of Professors Baumol, Ordover and Willig that "prices in competitive markets converge to incremental cost" (par. 12). While this statement describes hypothetically *perfectly* competitive markets, it certainly does not describe telecommunications. For

(continued...)

as AT&T were free to acquire network elements at bare incremental costs, they could confidently be expected to use those loops to compete away LEC sales of the high-margin services and so undermine the rate structure that enables the incumbent companies to recover their total costs, as we observe more fully at pars. 7 and 19.

11. There is another way in which a requirement that LECs sell unbundled network elements to their competitors could distort competition–this time competition with facilities-[*7*]based third party rivals. There will inevitably be a great deal of cost averaging in measures of TSLRIC for individual network elements: loops as a group presumably share the costs of poles, trenching, loop testing equipment and excess loop capacity to allow for growth (such as the growth in demand that might result from entry of competitors using unbundled loops). Presumably those shared costs could be fully recovered by charges equal to average TSLRIC–that is to say, by charges embodying a proportionale share of those shared costs. If then an LEC were required to sell those elements to AT&T–let us say–at that average TSLRIC and were in addition subjected to an imputation rule, requiring it to impute that average to its own retail services, in order to ensure competitive parity, it could then be undercut by a facilities-based competitor that, for competitive reasons, chose to charge retail prices that recovered a lower-than-average markup on sales in particular markets. This is by no means a remote possibility: AT&T of course obtains lower markups on toll service to high-volume than to low-volume users. Yet an incumbent LEC would be precluded from meeting the competition for such customers from CLECs, who would not be bound by the cost-averaging rule implicit in

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[3] (...continued)
example, when AT&T's incremental cost (including access charges) was about $0.07 per minute, its average revenue per minute was about $0.18.

AT&T's demanded TSLRIC pricing of network elements. The mixing together of average cost pricing in the mandated charge by LECs to some competitors for unbundled network elements and market-based pricing such as is routinely practiced by facilities-based competitors would thus be another source of distortion.

12. The recovery of sunk costs. The NPRM explicitly recognizes also the possible legitimacy of a markup contribution to the recovery of the sunk costs of incumbent LECs–item (d) on our list above–in par. 144. The answers to the questions it raises there, we suggest, are best supplied by the state regulatory commissions. It is they that have determined the revenue entitlements of the several LEC's under their jurisdiction, in conjunction with the FCC, prescribed the depreciation policies that have determined the residual amount of embedded costs legitimately recoverable and specified the mechanisms for their recovery–whether, as has been the historical practice, in cost-of-service, rate base/rate of return proceedings or, more recently, in determining the structure of "just and reasonable rates" serving as the beginning point for price caps, rate freezes, indexations and other kinds of incentive regulation. And it is their responsibility to ensure that the markups above incremental costs that they allow are no more than sufficient to recover these costs that constitutes the full [*8*] response to the demagogic contention by Professors Baumol, Ordover and Willig that such markups would "lock in the ILECs' monopoly profits..." (par. 23).

13. It would be difficult to measure the costs (in the form of the disincentive it creates for the LECs to invest further in their networks and the higher costs of capital in the future if investors are to make their funds available) of any such denial by government regulators of the entitlement of investors to recovery of costs prudently incurred and recoverable under previously prevailing regulatory policies. These costs are real,

however, and cannot be ignored. Entirely apart from the inescapable question of equity that such denials would raise, it is a reasonable economic (as well, perhaps, as constitutional) question whether a market system can survive if governments feel free opportunistically to change the rules of the regulatory game at the expense of investors, when it is temporarily to the advantage of consumers to do so. Indeed, AT&T's lead witness here has suggested that regulated companies must be allowed to recover their historical costs during the transition to competition for these very reasons.[4]

14. It would indeed be preferable on grounds of pure economic efficiency if these several justified costs were made good not by markups in the charges for inputs but in the prices of final products or services only. The reason is that markups

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[4] On page 10 Baumol, Ordover and Willig state: "Book costs are unlikely to reflect economic costs accurately, and basing the prices of network elements on book cost would be dangerously counterproductive." (See their many other such statements e.g., in pars. 5, 7 and 8).

To the extent that book costs exceed forward-looking costs, the difference between the two measures would be "stranded." Unless these witnesses have in mind some vehicle for recovery of historical costs other than the prices of inputs sold to competitors, their position here is starkly inconsistent with the position that Professor Baumol has taken in the electric industry. For example, in association with Professors Joskow and Kahn, he has asserted forthrightly: "A failure now of policy makers to ensure the companies at least some reasonable level of recovery of their regulatorily approved costs in any transition to competition would leave investors, in effect, with part ...of the value of their property expropriated by the change in the rules of the game. "The Challenge for Federal and State Regulators: Transition from Regulation to Competition in Electric Power," December 9, 1994, p. 34. Similarly, in collaboration with Sidak, he said: "Failure to allow recoupment of stranded costs will clearly violate this implicit regulatory compact. And aside from inequity, the failure to recoup could also deter capital investment" "Stranded Cost Recovery: Fair and Reasonable," *Public Utilities Fortnightly*, May 15, 1995, p. 22.

above incremental cost in the prices of inputs introduce the possibility of productive inefficiencies: so long as the demand for these inputs is not totally inelastic, the markups will result in some inefficient substitution of other inputs (with higher incremental costs) for the marked-up ones.

[*9*] 15. So long, however, as governments or regulatory agencies (1) feel bound, as we believe they should, to respect their commitments to afford public utility companies a reasonable opportunity to recover their legitimately-incurred costs, past and ongoing, and (2) are unwilling to do so by rebalancing final product or service prices, markups on inputs may be the best method available - at least during the interval (as brief as possible) over which high book values are written down and either rates are rebalanced or alternative methods of universal service funding installed.

16. The meaning of "a reasonable profit." We interpret the provision of the Telecommunications Act that charges for network elements must be based on cost by may include a "reasonable profit" as, at the very least, consistent with the foregoing statements of economic and regulatory principle, if not explicitly enduring them. Some parties have argued, on the contrary, that the statutory standard is satisfied where the prices of inputs provided to other carriers are priced at bare TSLRIC on the ground and economic cost already includes a "reasonable profit."

17. Entirely apart from the justifications we have already provided for the recovery of contribution there are the following responses to these assertions:

e. The Act says that these charges must be "based on costs." This clearly does not mean that they must be equated to cost.

b. In strict economic terms, the requisite return on incremental investments that is indeed included in measures of LRIC is a cost–the cost of capital–emphatically not a

"profit."[5] In strict economic logic, therefore, the permissibility of incorporating a "reasonable profit" contemplates charges above pure LRIC or TSLRIC.

[*10*]c. "Profit" has no economic meaning as applied to the price or revenues from any single service–or network element–supplied in common with other services. It has economic meaning only as the difference between total revenues and total costs (including in the latter the cost of capital) for an entire firm or accounting entity.

d. In the presence of economies of scope and scale, the sum total of revenues flowing from prices uniformly set at TSLRIC will–as the NPRM explicitly recognizes (par. 129) and as we have already pointed out–fall short of total economic costs. This is precisely why second-best pricing, with markups above TSLRIC are required.

e. The costs of regulatorily-prescribed underpricing of basic residential service would clearly have to be recovered if the LEC were to show a profit in purely economic terms; if the prices of some of its services are prevented by regulation from recovering their incremental cost,

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[5] A typical statement of this elementary proposition is, from Professor Paul A. Samuelson's standard and celebrated text:

> We have already encountered...examples of true economic costs that do not show up in business accounts. The return to an owner's effort, the normal return on contributed capital to a firm, a risk premium on highly leveraged owner's equity–these are all elements that should figure into a broadly conceived set of economic costs but do not enter business accounts. An economist would insist that the wages of management or the return on contributed capital are real economic costs. They use real, live managers and tangible capital. Samuelson and Nordhaus, *Economics*, Twelfth edition, New York; McGraw-Hill, 1985, p. 469.

firms will not earn a profit if all other charges are at incremental cost.

b. Finally, if the "reasonable profit" that the Act permits is intended to be understood in traditional accounting terms, rates would have to recover book as well as purely economic costs. These are, after all, the costs that the carrier actually has incurred in order to provide service.

18. The relationship between charges for unbundled inputs and the present rate structure. We have already cited the fact that the present rate structures of the LECs embody long-standing regulatory policies of deliberately pricing some services markedly above incremental costs in order to hold the prices of other services either at or below those costs and the FCC's acknowledgment of the consequent constraint on it to permit the LECs to incorporate a carrier common line charge and other public policy rate elements in their access charges to long-distance carriers. It has of course not been mere coincidence that the former services–incorporating these public policy add-ons– are the very ones that have become subject to increasing competition.

19. In these circumstances, the NPRM's "tentative conclusion that carriers can request unbundled elements for purposes of originating and terminating interexchange toll traffic" (par.163) could not be intended to give them the right to obtain those elements at bare cost unless the Commission were intending now to abandon the existing access charge regime. If the long-distance carriers were now free to purchase and assemble all the network elements necessary to [*11*] originate and terminated their calls at incremental cost, they could and would circumvent those charges and undermine the present balance between over- and under-priced retail services, by reducing the market prices of the former.

20. The NPRM poses the same question in another way (par. 85); Do the unbundling requirements in effect provide entrants with an alternative way to "resell" the various retail services of the incumbent LECs, apart from the specific statutory rules for resales? If a competitor could order and combine network elements at bare incremental cost in such a way as to offer the same or similar retail services as it is entitled to purchase under the resale provision, there would be no point to the resale provision as it might apply to retail services (such as toll) that are compensatory or supercompensatory.

21. Other things equal, such a charge for inputs would conduce to economic efficiency, for reasons we have already expounded. But until the pertinent rates are full rebalanced or some alternative method devised for supplementing revenues from the underpriced services, the recommendation of the IXCs here with the respect to pricing of unbundled inputs would undermine long-established regulatory policies, including FCC's own carefully balanced interexchange carrier access charges.

III. RECOVERY OF THESE COSTS WOULD NOT PRECLUDE EFFICIENT COMPETITION

22. The final argument of the parties who insist that the rates for unbundled network elements or other inputs provided to competitors must be set at TSLRIC is that any rates in excess of that level would impede competition. What these parties fail to recognize is that the incorporation of markups in the charges for inputs has in itself only an indirect bearing on whether efficient competitors are able to challenge the incumbent firms.[6]

23. The rules of competitive parity. The relationship

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[6] We explain this indirect effect at note 8, below.

between the charges for inputs and the opportunities for efficient competitive entry–it is essential to understand–has two vital aspects. One–which is totally ignored by the comments–is that in the present circumstances in the telephone business, markups in the charges for essential LEC network services are [*12*] necessary in order to ensure that competition is efficient. So long as the present regulatorily-imposed rate structures of the LECs, reflecting the historical practices of pricing basic residential service residually and averaging costs geographically, necessarily embody charges for some services above incremental costs, there is absolutely no assurance that the competition that the latter rates have attracted–and continue to attract–is efficient. Those rates indisputably create an opportunity for entry by rivals less efficient–that is, the incremental costs higher–than the incumbents. We see not recognition in the comments of the necessity for markups to equalize the competition that would otherwise be to the disadvantage of the incumbent LECs.[7]

24. The other side of the coin, assertedly, is of course the one emphasized by the proponents of setting rates at incremental cost–that if rates are too high, efficient competitive entry may be deterred. This second view, we respectfully suggest, reflects a failure to comprehend the simple but absolutely fundamental fact that the critical determinant of the opportunity for competitive entry is not the level of the charge

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[7] To be sure, that competition could be equalized also–and inefficient entry discouraged–by the incumbent companies reducing those subsidizing rates down to incremental costs. But that would involve a renunciation on their part of their historical entitlement to recovery of those unique costs and a violation of their obligations to their own shareholders. The more likely consequence of giving them freedom to reduce those rates wold be that they would set them at levels holding an artificial umbrella over less efficient competitors, so long as it appeared that the benefits to their shareholders of retaining the margins outweighed the consequent losses in market share.

entrants pay incumbents for an essential input but the margin between it and the prices of the competitive services.[8] Consequently, a pricing method that permits markups in the charges for network elements or other inputs could not in itself constitute a barrier to efficient entry.

25. Essential to the conception of an entry barrier is that it confer on incumbents a competitive advantage over would-be rivals. As Professor George J. Stigler put it:

> [*13*] a barrier to entry may be defined as a cost of producing...which must be borne by a firm which seeks to entry an industry but is not borne by firms already in the industry.[9]

The markups above incremental cost in the charges to competitors for network elements would confer no such advantage. Far from imposing a cost on would-be rivals that would not be borne by the incumbents, permitting the latter to recover embedded and ongoing costs associated with their

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[8] The level of the charges does, because of the elasticity of demand for the final products, determine the size of the total market and therefore the number of minimally efficient competitors that it will support. This is one reason why that absolute level is by no means a matter of indifference; and it argues, specifically, that the level be subject to regulatory determination that such markups as they contain are no more than necessary to fulfill regulatory obligations to the incumbent companies and to guard against inefficient entry that would otherwise be attracted by the inflated prices of the end services. Transferring the burden of recovery of these contributions from those end service prices to the charges to competitors for essential inputs in no way constricts the market additionally, however.

[9] The Organization of Industry (Homewood: Richard D. Irwin, 1968, p. 67. See the fuller discussion in W. Kip Viscusi, John M. Vernon and Joseph E. Harrington, Jr., *Economics of Regulation and Antitrust,* 2d ed., Cambridge: The MIT Press, 1995, p. 159; see also pp. 158-62

unique service obligations would restore a balance in a situation in which it is the incumbents that have incurred and/or continue to incur costs that are not borne by their challengers.

26. In the most famous case involving as asserted use of market power in the supply of an essential input to deny rivals a fair opportunity to compete, the antitrust suit under Section 2 of the Sherman Act against the Aluminum Company of America, the condemnation of Alcoa for exclusionary practices directed against competing fabricators depended not to the slightest extent on the level of its charge for the ingot that they had to purchase from it. It was based, instead, on the courts' finding that the margin between Alcoa's charges for ingot and for fabricated products–within which competing fabricators had to survive–was narrower than Alcoa's own incremental costs for fabrication. The rules of competitive parity explicitly preclude that possibility. By requiring–other circumstances being equal–that the prices charged for the competitive services by incumbent LECs be high enough to recover both the charges for basic network elements that their rivals pay and their own incremental costs, they ensure that competitors with incremental costs equal to or lower than those of the incumbent will indeed be able to enter and survive.

27. The inapplicability of competitive parity rules to non-compensatory services. As the NPRM clearly recognizes, application of such a competitive parity rule to the relationship between (wholesale) charges for unbundled inputs and the retail prices of services that are priced below cost is unnecessary to permit efficient competition. This is so because the [*14*] unbundled inputs give competitors and LECs alike access to the retail market not just for the underpriced services, but also for the

> relatively overpriced revenues for toll service, interstate access, vertical features, and other offerings to make up for the underpricing of

basic residential local exchange services. (par.16)

It correctly recognizes also the additional objections to application of an imputation rule in these circumstances–which would "require[s] that unbundled elements be priced below cost"–namely (1) that (unless and until some competitively-neutral method were installed for providing the subsidies) the competitors would in those circumstances be enabled to undermine the regulatorily-prescribed rate structure making possible the underpricing of the politically sensitive services, and (2) "if unbundled elements were priced at less than cost, then efficient facility-based entry would be deterred...."(par. 186)

28. The rule governing sales for resale and efficient competition. We strongly endorse the Act's resale provisions; by enacting the principles of competitive parity, [10] they invite efficient competition in the retailing of the particular services resold, with the outcome determined by comparative efficiency in performing the retailing functions. Where the resold services are priced non-compensatorily, however, these requirements pose the same threat of undermining regulatorily-prescribed rate structures and discouraging facilities-based competitive entry as would a requirement that the relationship between the prices of unbundled network elements and those retail prices satisfy the imputation or competitive parity tests. For this reason, as the

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[10] Those principles require that the incumbent's retail price for the competitive services (these would be the prices for fabricated aluminum products in the Alcoa situation) must be no lower than the wholesale charge for the essential input (read: aluminum input) plus its incremental costs of performing the retail function (read: Alcoa's fabricating costs). The resale rule says that the wholesale price of the competitive service must be no higher than the retail price minus the avoided costs of retailing, i.e., Alcoa's fabricating costs). These two requirements are identical.

NPRM recognizes, the statue permits state commissions, subject to FCC regulations, to place restrictions on resales of such services to categories of customers not eligible for the subsidized retail rates. Unless and until the relevant rates are rebalanced, therefore, respectively down closer to and up to compensatory levels, or competitively-neutral sources of funding developed to subsidize rates that continue to be held down incremental costs plus and efficient markup, [*15*] such restrictions on resale make good economic sense and, for the reasons the Commission itself supplies, deserve to be incorporated in any rules adopted at the Federal level.

29. So far as services whose retail prices are compensatory are concerned, manifestly no such restrictions on the markets in which they may be resold are either necessary or desirable. On the other hand, precisely because these services will be selling at both retail and therefore also at wholesale at prices in excess of incremental costs, the resale provisions of the Act provide further refutation of the demand by the interexchange carriers that the capabilities for providing various retail services be provided to them in the form of unbundled network elements priced at bare incremental cost. As we have already pointed out, if that demand were to prevail, it would make the resale provisions of the Act irrelevant. Would-be challengers would always find it to their interest to purchase and assemble all the necessary inputs themselves, at incremental costs, rather than avail themselves of the more costly resale option that provides contribution to help cover the LECs' total costs. From the standpoint of ensuring both efficient competition and regulatory consistency, the correct prescription would be to require the IXCs to purchase these retail services under the pricing standard in the resale provision.

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[*27*] Finally, the Cox model, which uses TSLRIC only as a boundary, does not inflexibly constrain LECs from making a case that they should recover amounts over and above TSLRIC. Where an incumbent can show that TSLRIC would not be sufficient, it will have the opportunity to pursuade a State commission that prices for unbundled elements should be calculated using FDC.[78] This will permit each State to make its own determination as to the appropriate level of incumbent cost recovery for unbundled elements.

2. There Is No Reason to Permit LECs to Recover More than the Fully Distributed Cost of Unbundled Elements.

Some ILECs suggest that the Commission should adopt a standard for pricing unbundled elements that permits them to recover their embedded costs plus some additional amount, either as "profit" under Section 252(d)(1) or on the basis of foregone monopoly revenues in the future.[79] There is no rationale to permit such an approach.

First, it is important to recognize that, as an absolute cost ceiling, FDC more than compensates a LEC for any cost it

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[78] While States should have the latitude to determine that some or all costs for unbundled elements should be based on recovery of embedded costs, Cox envisions that FDC would be the exception, rather than the generally applied standard.

[79] See, e.g., Comments of BellSouth at 56-57; Comments of Cincinnati Bell at 30-31; Comments of USTA at 47.

reasonably could expect to recover. FDC is based on embedded costs, *i.e.*, the costs the LEC has incurred, and includes profits calculated using embedded costs. Incumbent LECs have no legal entitlement to more than that.[80] Moreover, [*28*] as shown above, many incumbent LECs already have informed shareholders that they do not expect to recover all of their embedded costs by writing down the financial book value of their telephony assets.[81]

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[80] Indeed, any price that exceeds fully distributed cost is likely to be too high and, consequently, legally impermissible because it exceeds the bounds of the zone of reasonableness. See Washington Gas Light v. Baker, 188 F. 2d 11, 15.

[81] See supra page 25. In addition, BellSouth suggests that embedded cost and book cost are, in fact, the same. Comments of BellSouth at 56. To the extent that this is true, the written-down values of telephony assets on the companys' financial books would be the correct ones to use to determine embedded cost, not the values on the LECs' regulatory books.

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[*14*] expanding the number of actors in determining such obligations, NTIA's proposal ensures that the process will be dynamic and not unduly affected by the decisions of a single entity. Although NTIA's approach will not eliminate local or, perhaps, regional variation in the interconnection/ unbundling requirements prescribed, it will create a trajectory of increasing interconnection and unbundling obligations, with all of the competitive benefits that such a path is likely to generate.

III. PRICING OF INTERCONNECTION AND UNBUNDLED NETWORK ELEMENTS

If Section 251's interconnection and unbundling provisions are designed to promote competition, the pricing of network interconnection and unbundled network elements will determine to a large extent how effective Section 251 will be in achieving that objective. Generally speaking, the Act requires that the rates established for interconnection or for network elements should be: (1) nondiscriminatory and (2) based on the costs of providing such interconnection or element, including a reasonable profit.[30] The Notice seeks comment on how best to ensure compliance with that standard.

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[30] Act § 252(d)(1). The Act's specification that rates may provide a reasonable profit is somewhat redundant because conventional economic measures of "cost" assume a reasonable or "normal" profit.

[*15*] NTIA agrees with the Commission and the Department of Justice that the Commission should establish a minimum set of principles governing the pricing of interconnection and unbundled network elements.[31] As the Commission points out, Section 251(d) of the Act requires the Commission to adopt regulations to implement the statutory requirements for ILECs to provide interconnection and unbundling on "just, reasonable, and nondiscriminatory" terms.[32] Nationwide pricing principles would furnish a certain and consistent benchmark for assessing ILEC's compliance with that fundamental obligation.

Commission-prescribed pricing principles would also serve the Act's overriding pro-competitive goals in the same way as a national framework with respect to interconnection and unbundling. They, would, for example, increase the predictability of interconnection and unbundling pricing, making it easier for new entrants to develop their business plans and facilitating negotiation, arbitration, and review of interconnection agreements between entrants and ILECs.[33] At the same time, national pricing principles would not encroach upon the rights of State commissions because they would retain responsibility for applying those principles (in contested negotiations) to [*16*]establish or to approve specific prices in particular circumstances.[34]

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[31] Notice ¶¶ 39-40; DOJ Comments at 24-26.

[32] Notice ¶ 117 (citing Act §§ 251(c)(2), (c)(3)).

[33] DOJ Comments at 25; Notice ¶ 40.

[34] DOJ Comments at 25.

We should emphasize here that any pricing principles adopted by the Commission should give negotiating parties every opportunity to reach mutually acceptable agreements with respect to price as well as other network interconnection and unbundling details. In the event that negotiating parties fail to reach agreement, the State regulator should establish the appropriate price for the interconnection to be provided, based on specific Commission-prescribed guidelines that embody the pricing objectives described below.

A. General Pricing Principles

In establishing national principles for pricing interconnection arrangements and unbundled network elements, the Commission's central objective should be that identified by Congress -- to ensure that the rates for those offerings reflect underlying costs. Regulations that govern telecommunications service pricing should be designed to produce service prices equal to the opportunity costs society incurs from having its scarce resources devoted to the production of these services.[35] [*17*] Policies that deviate from this basic principle will send incorrect price signals and thereby distort ILEC and new

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[35] Prices should be based upon "forward looking" costs – the expenditures that a business will incur or avoid as a result of future decisions. "Economically efficient pricing looks not to the past – not to how we got where we are – but to the future; efficiency requires that prices tell customers what incremental resources society will use if they take more of the good or service in question, what resources society will save if they consume less of it." Alfred Kahn and William Shew, Current Issues in Telecommunications Regulation: Pricing, 4 Yale J. on Reg. 191, 224 (1987) (Kahn and Shew).

entrants' investment decisions, as well as consumer purchases, in a manner that harms society's economic welfare.[36]

On the one hand, requiring ILECs to establish prices that are below the true costs of providing their services will likely encourage excessive entry by resellers in the short run, thereby expanding service consumption beyond the economically efficient point. Below-cost pricing also may not allow ILECs to make economically efficient investments in telecommunications infrastructure. On the other hand, allowing ILECs to price services above costs will retard entry by resellers, depress service consumption relative to the economic optimum, and invite economically inefficient facilities-based competitive entry.

Establishing a set of economically efficient prices is complicated by at least two factors. First, provision of telecommunications services appears to be characterized by [*18*] significant joint and common costs.[37] There is no easy way to apportion such "shared" costs among the services involved so as to establish the "true" costs of providing each service. Second, setting efficient prices requires considerable information on underlying costs that are typically within control of the serving ILEC, rather than the relevant regulator. The ILEC obviously has no strong incentive to reveal private cost information that may do it harm.

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[36] The extent of this "allocative" distortion depends upon the level of usage and investment either stimulated or stifled by inefficient pricing.

[37] See, e.g., Kahn and Shew, supra note 35, at 194. Joint costs are expenditures that are incremental to a group of services, but not to any particular service within that group. Common costs are expenditures that, at least in theory, can be attributable to a particular service.

B. TSLRIC: An Analysis

Given the asymmetry in cost information between regulators and regulated firms, the Commission should not sanction any costing methodology that relies heavily on ILEC-provided information. A number of commenters in this proceeding have proposed an alternative approach, referred to as total service long run incremental cost (TSLRIC). Because TSLRIC cost estimates are not based on ILEC-provided information, NTIA believes that they can be very useful to the Commission and State regulators in securing efficient and pro-competitive prices for interconnection and unbundled network elements. As discussed below, TSLRIC can be particularly valuable if employed as a lower bound with which to structure negotiations.

[*19*] In their most basic form, however, TSLRIC estimates alone may not be sufficient to accomplish the regulator's pricing objective -- fostering competition through interconnection rates that accurately reflect input costs.[38] For instance, as NARUC correctly notes, "because some shared costs are not included in the calculations of TSLRIC, a firm that collects only TSLRIC from all of its services will not be able to cover its total costs, including overheads, and could not remain

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[38] Cf. DOJ Comments at 30 ("If the prices that competing carriers pay for their inputs are distorted from the true economic costs of those inputs, those prices will lead carriers to choose technologies that will minimize their use of overpriced but lower cost inputs, thus impairing the quality or increasing the cost of their service offering"). This implies that if prices are below the "true economic costs" of inputs, carriers will choose technologies that maximize their use of underpriced but higher cost inputs.

viable over the long term."[39],[40]

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[39] See id. at 35. Hatfield's TSLRIC model does attempt to account for some administrative overhead:

> Certain costs that vary with the size of the firm, and therefore do not meet the economist's definition of overhead, are often included under the classification of General and Administrative expenses. For example, if a LEC did not provide loops, it would be a much smaller company, and would therefore have lower costs. Some of those costs are attributed to overhead under current LEC accounting procedures. We therefore include a portion of these "overhead" costs in our TSLRIC estimates.
>
> Historical overhead expenses for the LECs, such as administration, planning, legal, and human resources seem excessive when compared to firms that operate in a competitive environment. The relationship between revenues and overhead for selected firms in the auto manufacturing and airline industries was examined. A six percent overhead loading factor was found for these industries. The cost of the functions that this factor is used to estimate should not vary widely across industries. In other words, the relationship between revenues and administration, plaining, legal, and human resources are likely to be similar in the telecommunications industry.

Hatfield Associates, Inc., The Cost of Basic Network Elements: Theory, Modeling and Policy Implications 30 (March 1996) (prepared for MCI Telecommunications Corp.)

We note that by defining shared costs as not being incremental to any one service, we do not imply that these costs are invariant to the size of the firm, as Hatfield contends. It is also unclear how sensitive Hatfield's TSLRIC estimates are to changes in the six percent overhead factor. To the extent that Hatfield excludes some shared costs or its six percent factor underestimates true overhead costs in telecommunications, its TSLRIC model may underestimate the ILECs' costs.

[40] Economists generally agree with NARUC's assessment that TSLRIC prices do not cover all of the ILECs' joint and common costs. For example, Harris and Yao note that

> In addition to TSLRIC, LECs also have shared costs which are incurred for facilities and resources used in the production of two or more services, and can therefore not be eliminated by the discontinuation of a single service. Examples of shared costs include fiber strands used for transport services, and stand-by modular switching capacity. These shared costs are incurred whenever LECs provide services to end-users and should therefore be reflected in retail, wholesale, unbundled network element and call termination prices. Some portion of common costs also need to be recovered. Common costs are incurred through facilities and resources used in the production of all the LECs services.

Robert Harris and Dennis Yao, Federal Implementation of the Telecommunications Act of 1996: Competition in the Local Exchange 18 (May 1996) (Attached to Comments of US West, Inc.) (Harris and Yao). Harris and Yao used the term shared costs in the way that we (and NARUC) use the term joint costs. We use the term shared cost to refer to both joint and common costs.

Potential interconnectors acknowledge that joint and common costs are part of the long-run incremental costs of a service that should be recovered. They are legitimately concerned nevertheless, about an IEC's' incentives to overstate those costs. As AT&T puts it:

> the TSLRIC of a network element includes all of the element-specific investment needed to construct and operate the facilities used to produce that element, including costs that are fixed in the short run. There may well be some cases of non-trivial "common" or "shared" costs, however, and, particularly in light of the potential for confusion and abuse in this area, it is critical that the Commission establish rules to constrain the ILECs' incentives and abilities to manipulate the quantification and allocation of "common" or "shared" costs in ways that thwart competition.

(continued...)

[*20*]

[*21*] Further, estimation of TSLRIC requires the identification of a cost-minimizing service output level. This, of course, requires a prediction regarding the service's peak load (or busy-hour) demand. TSLRIC assumes no change in the size of the service's peak load demand. That assumption can be criticized in several respects. Today's demand figures result from a pricing structure that should change with the arrival of competition. More importantly, current demand is based on service prices that may be substantially higher than service prices under TSLRIC. Unless demand for network elements is perfectly inelastic, any lower prices will stimulate, perhaps substantially, service demand.[41] Using TSLRIC estimates alone may therefore [*22*] underestimate the ILEC's true cost of creating and maintaining a network of sufficient size.[42]

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[40] (...continued)
Comments of AT&T Corp. at 62-63 (emphasis in original) (footnotes and citations omitted). NTIA strongly agrees that only those costs that are truly incremental to the provision of a service or functionality should be considered in reviewing interconnection rates.

[41] The existence of economies of scale and peak-load demand problems in the telecommunications sector suggests that identifying economically efficient prices requires not only cost studies, but analyses of service demand as well. Because TSLRIC largely ignores the service demand dimension, the use of TSLRIC alone will be limited in its ability to yield an economically efficient set of prices.

[42] A second drawback of TSLRIC is that it is based on the cost of providing an entire service, as opposed to traditional economic cost measures that identify the cost of providing additional units of a service (e.g., LRIC). In practice, however, it may not be possible to measure accurately changes in average costs associated with changes in output. As (continued...)

Assuming one could overcome these difficulties, relying solely on TSLRIC-based prices may be unwise for several reasons. Although interexchange carriers (IXCs) have argued that a forward-looking, least cost methodology reflects the "true" economic cost of providing service. TSLRIC estimates differ from standard economic long run costs. Typically, a firm's costs reflect not the plant it could conceivably create, but rather the plant it already has. The theory of long run adjustment in a competitive market holds that, if the provider's plant does not permit the most efficient means of production, potential entrants have an incentive to construct the appropriate plant, implement the least cost production process, and undersell the incumbent. [*23*] In the long run, only those firms that use the least cost technology will remain in business.[43]

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[42] (...continued)
a result, the best available "increment" for deriving incremental costs will likely be the entire service or functionality. Indeed, the cost principles we advocate below employ a service or functionality as the increment.

[43] In this respect, TSLRIC runs up against the theory of long-run adjustment in a competitive market:

> Even when they do not have any shared and common costs, firms in competitive industries experiencing rapid technological change do not price their goods and services at TSLRIC. Under standard economic theory, the least efficient, viable producer in an industry would earn zero economic profits. All producers using older technology are, at least in the short-run, forced to either upgrade their plant or exit the market. Conversely, positive economic profits are earned by the most efficient and innovative firms in a competitive market. Therefore, what often occurs in competitive industries is that a production facility makes above average profits during its early years of operation which decline over time until the firm is forced to upgrade or close down the production facility.
>
> (continued...)

Further, to the extent that these rates reflect a low cost network that is yet to be created, incumbents may have to accept interconnection payments below their actual costs of supplying service. Also, if interconnectors receive rates associated with the least cost method of production, none will have the incentive to create its own efficient network. Finally, no service provider [4] would have an incentive to operate the existing network if constrained to provide interconnection at TSLRIC-based rates that are below average cost.

[*24*] One important potential advantage of the TSLRIC approach, however, is its relative ease of calculation. Rather than estimate costs reflecting the present ILEC network -- a difficult task even if ILECs provided reliable data -- it is possible to generate TSLRIC estimates based on a "green field" approach, which assumes construction of a network from scratch. A recent TSLRIC model created by Hatfield Associates (Hatfield),[44] for example, estimates the least cost method of providing a service to a given number of customers with the best available technology. To its credit, Hatfield's methodology employs a forward-looking cost approach. But, a TSLRIC model based solely on "green field-derived" costs may not measure forward-looking costs sufficiently from the perspective of either the ILEC or the regulator. The ILEC's

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[43] (...continued)

However, if industry-wide prices were set at TSLRIC, only the most efficient producer using the latest technology would be able to cover its costs and make a profit.

Harris and Yao, supra note 40, at 19.

[44] Hatfield Associates, Inc., The Cost of Basic Network Elements: Theory, Modeling and Practice (Mar. 1996) (prepared on behalf of MCI Telecommunications Corp.).

forward-looking costs are reflected in its short run marginal cost curves -- not the cost point estimate generated by Hatfields green field methodology.[45]

[*25*] Despite the limitations of a TSLRIC approach, it nevertheless offers an objective, tractable means of estimating the costs of an ILEC's services and functionalities. For that reason, NTIA believes that TSLRIC should be part of the pricing principles that the Commission adopts to ensure just and reasonable rates for ILEC interconnection arrangements and unbundled network elements.

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[45] We understand that the Hatfield model has been revised to address concerns about its green field nature. Specifically, it appears that the approach has evolved from a "scorched earth approach [that assumes] no direct interoffice trunking and homogenous population density zones" to a "scorched node approach using outputs from the Benchmark Cost Model [developed cooperatively by IXCs and ILECs] to size loop plant requirements." Comments of AT&T Corp., App. E at 1 n.1. Because we believe that TSLRIC estimates should be based on actual ILEC costs, we support, as a general matter, any attempt to modify the Hatfield model or any other TSLRIC model in that direction.

C. TSLRIC as Part of a Banded Approach

The optimum costing methodology would allow the Commission and State commissions to set interconnection rates at the long run average incremental cost (LRAIC) of service for the present network.[46] In this way, incumbents would recover

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[46] As the Department of Justice notes:

> The TSLRIC methodology would price network elements at the long-run, forward-looking economic costs of the particular network element, given the efficient provision of all other network components by the ILEC. This standard would be "forward looking" in that it would be based on the best generally available technology, current input prices, and economic cost-minimization. It would be "long run" in that it would include the forward looking capital costs necessary to provide the element. It would define and utilize the network element as the appropriate "increment," and its added cost would be the added economic cost of the element conditioned on the provision of other network components.

DOJ Comments at 27. NTIA's LRAIC also uses the network element as the appropriate increment, although NTIA recognizes that the total costs of the network must be apportioned among all users. The average cost measure makes it easier to accomplish this; by multiplying average cost by some measure of an interconnector's use of the element (e.g., number of subscribers or calls), the interconnection cost for each user can be calculated. We discuss this in more detail below. NTIA's LRAIC is long run in the sense that it includes the capital costs necessary to provide the element at least cost, given the existing network configuration. NTIA does not, however, favor a green field approach to interconnection pricing, as that will understate the ILECs' true cost. To the extent that the "forward-looking" component to Justice's TSLRIC contemplates a green field approach, NTIA urges that it be used as a lower bound to structure negotiations between LECs and interconnectors. NTIA and Justice agree that interconnection rates must reflect joint and common costs. See id. at 27

(continued...)

their economic [*26*]of production for the service in question,[47] including capital costs[48], without also recouping costs incurred solely in the provision of other services. NTIA readily acknowledges, [*27*] however, that given the

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[46] (...continued)
("TSLRIC rates may need to be adjusted to permit recovery of forward-looking and common costs that may not be included in the sum of element-by-element TSLRIC rates"). In sum, if Justice is, in fact, not suggesting a green field approach to interconnection pricing, our approaches are quite similar.

[47] The service in question here is, of course, telephony service. Consequently, the derivation of an IELC's LRAIC must not include investments "in facilities 'over-designed' to enable the present or future delivery of cable television or other video services, 'official networks' overdesigned to facilitate the potential future provision of interexchange services, and other investments designed to meet the expected incremental demands or technical requirements of non-basic or enhanced services." Comments of AT&T Corp. at 59.

[48] In the long run, all costs, including capital costs, are variable. Long run costs include a "fair" return on invested capital. This return is correctly thought of as a cost; if it were not paid, those investment dollars would migrate to other opportunities that did pay a fair return. Long run costs must, therefore, reflect the opportunity cost of capital. This also includes the ILEC's costs of unbundling.

The reference to incremental cost leaves open the "size" of the increment. To the extent that average costs vary with the quantity of service produced, the increment should be each additional unit of service provided (i.e., each additional customer). In practice, however, it may be difficult, if not impossible, to measure long run average cost at such a fine level. Instead, the regulator will likely treat the entire service or functionality (all subscribers served) as the increment, and estimate average costs by dividing the total long run costs associated with the service (or functionality) by the number of subscribers.

informational asymmetry between ILECs and regulators, it may be difficult to calculate LRAIC accurately.

For that reason, we believe that the Commission should establish pricing principles that define a "zone of reasonableness" within which negotiating parties may seek interconnection and unbundling rates. That zone should be defined at the bottom by TSLRIC.[49] Its upper limit should be established through a "bottom-up" approach beginning at TSLRIC.[50] An ILEC would have an opportunity to demonstrate by clear and convincing evidence that the TSLRIC estimate should be adjusted to include additional costs -- joint, common, or other[51] -- that: (1) contribute to a ILEC's long run average

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[49] To the extent that State regulators are certain that an ILEC has little incentive to reach interconnection agreement or has too much bargaining power over potential interconnectors, the threat of TSLRIC pricing may be an effective motivational tool. We prefer reliance on voluntary negotiation to establish interconnections terms. As discussed below, in many cases, the Act contains sufficient incentives for both interconnectors and ILECs to reach agreement. We also recognize, however, that State regulators may need latitude to determine interconnection rates in those instances when voluntary negotiations fail. See, e.g., Washington Util. & Transp. Comm'n v. US West Comm., Docket No. UT-950200, Fifteenth Supp. Order 89 (Apr. 11, 1996).

[50] Here we allude to TSLRIC estimates that do not already include an "overhead factor" to account for shared costs. For Hatfield's most recent estimates, the regulator would subtract the six percent overhead factor to recover "pure" TSLRIC estimates. ILECs would be required to justify costs in excess of these lower estimates.

[51] As the Justice Department points out, TSLRIC should be adjusted upward to account for forward-looking joint and common costs, whenever such costs exist. DOJ Comments at 27, 31-32. NTIA believes that the Commission should determine what permissible categories of such joint and

(continued...)

[*28*] incremental cost of the services used by an interconnection and; (2) can be justified to the regulator as being clearly incremental to the provisioning of the service or functionality at issue, but is not part of the TSLRIC estimate for that service or functionality.[52]

The above procedure leaves open the question of whether, and if so how, to recover any differences between historical costs and TSLRIC's forward looking costs. Clearly one should consider for recovery only those costs that the ILEC can demonstrate convincingly to the regulator are incurred in service provisioning. Moreover, clearly the ILEC may not be entitled to recover any or all of its embedded costs, no matter how prudently incurred. First, the regulator should require the ILEC to mitigate these costs in instances where greater efficiency can be gained through the existing network. Secondly, any additional benefits that the ILECs gain as a result of changes in the regulatory environment should be taken into account (e.g., benefits from interLATA entry). There may be some remaining shortfall, but its size, of course, will not be determined for a number of years, certainly until after interLATA entry. As a result, if the shortfall is to be recovered at all it would be unwise to include it in input prices before the size of the shortfall is better known. Finally, we note that if there are [*29*] any historical costs that should be recovered, it is preferable to recover them through input prices as a last

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[51] (...continued)
common costs are.

[52] See Bridger Mitchell, Werner Neu, Karl-Heinz Neumann, and Ingo Vogelsang, "The Regulation of Pricing of Interconnection Services" at 116 (Mitchell et al.) (on file with NTIA).

resort only. Recovery through input prices should be done only through a competitively neutral manner.

The price negotiated by the parties could fall anywhere within that zone of reasonableness.[53] NTIA expects that the parties will bring to the negotiation their assessments of how the relevant State commission will apply the Commission's pricing principles to define the zone in particular circumstances.[54] Each party's assessment of the State regulators likely decision will be an important component of its bargaining strategy, because that assessment will establish the odds of having unfavorable pricing terms imposed upon them. In this way, Commission-established principles for establishing the zone of [*30*] reasonable prices would increase the parties' incentives to negotiate in good faith.[55]

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[53] The same would be true of a rate fixed by the State via arbitration.

[54] The RA [Regulatory Authority] should indicate that, if no agreement was reached and it were asked to make an ex-post determination, it would determine a charge in that range on the basis of its assessment of the demand conditions in that market. This would provide proper incentives for the two sides in the negotiations. Not knowing what the RA would do in case of failure of negotiations, both would have a preference to reach a settlement on their own accord. Of course, if either party speculated that it would have a good chance that its view on charges would be confirmed by the RA, it might opt to let negotiations fail and rely on the RA's decision. This would have to be accepted as a legitimate part of the process.

Mitchell et al., supra note 52, at 114.

[55] NTIA believes that the prospect of interLATA entry will give the BOCs, at least, incentives to negotiate in good faith. We recognize, nevertheless, that the BOCs' incentives in this respect may decline after they

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The Commission can strengthen those incentives by promulgating some basic rules for State commissions as they arbitrate contested negotiations. If one or more party requests State commission arbitration concerning the rate for a given interconnection arrangement for unbundled network element, the regulator should begin by defining, consistent with the Commission's pricing principles, the upper and lower bounds of the zone of reasonableness for that item. If both parties' [*31*] proposed rates lie outside of the bound, the State commission should either send the parties back for further

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[55] (...continued)
have been certified to provide interLATA service. Interconnectors may be protected, to some extent, by the BOCs' existing agreements in that market. To the extent, however, that those agreements are unsuitable for the late entrant, the State regulator may have to choose rates in response to failed negotiations. In extreme circumstances, we see no reason why the Commission could not revoke an ILEC's certification to provide interLATA service.

In general, we favor agreements that give ILECs no incentive to alter their behavior after receiving interLATA certification. Self-executing contracts, which spell out penalties for readily observable ILEC violations with regard to service quality, may be helpful. If these are among the first contracts signed by IELCs, the self-executing provisions may also afford protection for subsequent entrants.

We also strongly recommend that the Commission include as part of the public interest standard governing OBC interLATA entry under Section 271 a requirement that the BOCs have in place processes and procedures for on-going interconnection negotiations, that they have established a practice of bargaining in good faith, that their agreements with interconnectors be self-enforcing, and that their business dealings pursuant to those agreements be found to be in good faith.

negotiation or choose a rate that falls within the zone.[56] If one of the proposed rates is within the zone and the other is not, the regulator could either opt for the inband price, or allow the party who lies outside the band to make a final offer within the zone.[57] If both offered prices are within the zone, the Commission should require that the State regulator choose either of the two prices.[58]

D. Allocating Costs Among Services and Interconnectors

As alluded to above, assigning costs to individual services or functionalities is difficult in the presence of substantial [*32*] shared costs. One way to handle this problem is to compute a percentage mark-up on the LRIC of each service, as Hatfield does. Although Hatfield employs a six

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[56] Once a price for an interconnection arrangement or unbundled network element has been established, whether by negotiation or arbitration, that rate ought to become the ceiling of the zone of reasonableness in subsequent negotiations between the same parties about the same arrangement or element. In other words, in any negotiation triggered by the expiration of an interconnection agreement, the zone of reasonableness for the rates for any arrangement or network element that was part of the old agreement will be defined by TSLRIC and the applicable rate in the expired agreement. It would be reasonable, however, to permit some flexibility in that upper bound to reflect changes in ILEC costs over time. One solution, at least for price cap regulated ILECs, would be to allow adjustments to the upper bound in accordance to the price cap escalator formula applicable to the ILEC involved. The parties would remain free, of course, to negotiate (and a State commission could establish) a new rate within the new zone of reasonableness.

[57] This latter option would minimize the chance of a mistaken choice in those instances where, for example, one party's price lies at one extreme of the zone and the other party's offer falls just outside the other extreme.

[58] See Notice 268 (requesting comment on "final offer" arbitration).

percent mark-up, that estimate may not be reasonable for all ILECs. If the size of total shared costs is known, one could conceivably calculate the unique percentage mark-up applied to all services such that shared costs are just covered. In practice, it would be wise for the State regulator to employ a relatively low estimate of shared costs in the lower bound of its price band for a service (e.g., Hatfield's), a higher estimate in the upper bound, and then permit the parties to arrive at a mutually beneficial arrangement through negotiation.[59]

Another potential problem arises in apportioning LRIC among users (both interconnectors and the incumbent ILEC) who share a facility. The TSLRIC methodology, for example, derives cost estimates for an entire service or functionality; it does not specify how that total cost should be apportioned among users.[60] [*33*] The costs of a shared facility should be

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[59] A similar approach is suggested by Mitchell et al.:

> The percentage mark-ups on top of LRAIC for interconnection services should vary between zero, as the lower limit, and, as the upper limit, the minimum uniform mark-up, that is, that common mark-up that, when applied to the LRAIC of each service, would lead to revenues that cover all costs, including common costs, and all other revenue requirements.

Id. at 113.

[60] One could, conceivably, compute the ILEC's total costs before and after it provided a service or functionality to an interconnector to determine that entrant's individual TSLRIC. The same interconnector, however, might face different TSLRICs depending on when it entered the market. That is, the first entrant might face a relatively large TSLRIC, as the ILEC reconfigured its network to accommodate interconnection while subsequent entrants might bear much lower burdens. We think it best, therefore, that

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apportioned based on the capacity required by the individual interconnectors:

> Pricing would be capacity based if a user paid at each point of time in relation to the depreciation charges for that part of the capacity that, either at the time of investment, or at the latest revaluation of the asset because of changing market conditions, was "reserved" for him....It would...not be unrealistic to apply capacity-based pricing to large users, in particular interconnecting network operators. Such users have predictable consumption patterns. . . Capacity-based costing would not preclude charging for operating costs on the basis of actual usage with which this kind of cost varies. Nor would it preclude, of course, charges based on actual usage if the latter exceeds the capacity that was reserved for the demander.[61]

In New York, parties have negotiated capacity-based pricing arrangements that employ measures of actual usage. Under the NYNEX-Teleport Agreement:

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[60] (...continued)
the ILEC compute a comprehensive TSLRIC for a service, and then apportion that cost among users.

[61] Mitchell et. al., supra note 52, at 106.

> The general form of the agreement is to establish a particular charge for a two-way channel of given capacity between the two companies. Traffic is measured at the busy hour each month and the relative measurements are used as an allocation factor for the established channel rate. If traffic is exactly balanced, the payments to each company cancel out and the level of the established rate is irrelevant. If traffic is not balanced, and if Teleport, for example, sends more traffic to NYNEX than it receives [*34*] from NYNEX at the busy hour, that imbalance is used to compute a net payment from Teleport to NYNEX.[62]

As Brock and others have noted, the distinction between peak and off-peak traffic (1) provides an administratively simple way to calculate contributions from firms and (2) promotes economic efficiency because costs are "generally associated with peak traffic and therefore the effectively zero charge for terminating off-peak traffic is cost based."[63] Again,

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[62] Gerald Brock, "Interconnection and Mutual Compensation With Partial Competition," in The Economics of Interconnection 14 (Apr. 1995) (prepared for Teleport Communications Group).

[63] More generally, Brock notes that:

> If the established price for a channel of given capacity is near the real cost, then the NYNEX-Teleport arrangement provides an attractive model for general interconnection issues. It would approach a cost-based interconnection fee for both peak and off peak traffic, leading to economic efficiency and opportunities for pricing innovations.

Id. at 15.

the exact method for sharing costs among users should be agreed upon through negotiation and may vary across markets. The NYNEX-Teleport agreement is but an example of a usage-based agreement that promotes economic efficiency.

REPLY AFFIDAVIT OF PROFESSOR JERRY A. HAUSMAN

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[*5*] 7. In its description of TSLRIC, AT&T calls for the "most efficient technology" so that the "less efficient" COS technology that it sold to ILECs would not be covered. At the time the ILECs bought the AT&T COS, they were widely considered to be the best technological choice, see e.g. Hausman and Kohlberg (1989). Because the switches were a sunk investment, AT&T's recommended method to set prices at TSLRIC would not allow recovery of an efficient investment in 1990 which is "not efficient" in 1996 due to technological progress. AT&T's argument that all firms face risk from changing technology (p. 71) is correct; but firms which face these risks build a risk premium into their prices. Regulation has not permitted ILECs to build in the risk premium. Indeed, improper depreciation lines set by regulation has led to too slow capital recovery even in a world of certainty.

8. I now account for the sunk nature of the investment and uncertainty. Given the fundamental uncertainty and the sunk nature of the investment, a "reward for waiting" occurs because over time some uncertainty is resolved. The uncertainty can arise from at least 4 factors: (1) Demand uncertainty; (2) Price uncertainty; (3) Technological progress (input price) uncertainty; and (4) Interest rate uncertainty. Now the fundamental decision rule changes to:

$$P > \frac{\beta_1}{\beta_1 - 1} (\delta + \lambda) I \qquad (2)$$

where $\beta_1 > 1$ so that $m = \beta_1/(\beta_1 - 1) > 1$. The parameter β_1 takes account of the sunk cost nature of the investment coupled with

inherent economic uncertainty.[6] Parameter m is the mark-up factor required to account for the effect of uncertain economic factors on the cost of sunk and irreversible investments. Thus, the critical cuts off point for investment is $P^s > P$ from equation (1).

9. To see how important this consideration of sunk costs can be, I need to evaluate the factor m. The parameters $ß_1$ and m depend on a number of economic [*6*] factors. It can be demonstrated that as uncertainty increases, i.e. the variance of the underlying stochastic process , $ß_1$ decreases and the m factor increases. Also, as δ increases, $ß_1$ increases which means that the m factor decreases. As r increases $ß_1$ decreases so that the m factor increases. Dixit and Pindyck (1994, p. 153) calculate $m = 2$ so that, for instance, $V^s = 2I$.[7] A TSLRIC calculation which ignores the sunk cost feature of telecommunications network investments would thus be off by a factor of two. Using parameters for ILECs and taking account the decrease in capital prices due to technological progress (which Dixit and Pindyck assume to be zero in their calculation) I calculate the value of m to be around 3.2-3.4. Thus a TSLRIC calculation which ignores sunk costs for telecommunications networks is

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[6] I do not derive this equation here since it is the solution to a differential equation. For a derivation see e.g. Dixit and Pindyck (1994), pp. 254-256 pp. 279-280, and p. 369. The parameter $ß_1$ depends on the expected risk adjusted discount rate of r, expected exponential economic depreciation δ, and the net expected price -a and the amount of uncertainty.

[7] Ingersoll and Ross (1992, p. 12) for a 20 year project, which seems about right for network investment, calculate an adjustment factor of about 2.2 times. This calculation considers only interest rate (price) uncertainty, and does not account for technological change.

systematically downward biased by a factor of at least 2, and the factor probably exceeds 3.[8]

10. A TSLRIC calculation would now miss two components which would lead to a systematic downward bias: (1) price decreases in investment due to δ, which represent changes in technology and (2) the sunk cost factor in telecommunications networks combined with inherent economic uncertainty. Combining these two omitted factors in a TSLRIC calculation demonstrates that the systematic downward bias can be substantial. For reasonable values of the parameters, TSLRIC can be biased downward by a factor of over 3. As an approximation, the discount rate would need to increase by the same factor to [*7*] give the correct rule for investment decisions by a firm facing competition.

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[*8*] investments and uncertainty are socially optimal. By assuming away uncertainty and not discussing the free option that they would give to CLECs (and which Ingersoll and Ross (1992) demonstrate is very valuable), BOW are not capturing

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[8] Thus, Sprint's proposal to use the federal rate of return in a TSLRIC calculation (p. 45) neglects the sunk cost component of the investment and would lead to badly biased results. Consider the following example. Hewlett Packard (HP) makes microprocessors which are used in work stations which it sells to its competitors who also manufacture work stations. Investment in a new microprocessor fabrication plant is very risky given increasing competition from Intel Pentium class chips. The investment is almost totally sunk. Now HP's hurdle rate is likely 2-3 times its cost of capital. Yet Sprint's proposal would force HP to supply microprocessors to it based on the cost of capital, not on the hurdle rate.

all of the costs imposed on the ILECs by the CLECs.[11] Thus, their recommendation leads to economic inefficiency and a socially sub-optimal outcome.

B. Efficient Entry Decisions

13. The DOJ claims that a second advantage of a pricing standard based on TSLRIC is the "creation of the 'right' investment incentives for competitive facilities-based entry" in terms of the "entrant's 'make or buy' decision with respect to network elements (DOJ, p. 29). The DOJ is again incorrect because it has failed to take account of the effect of sunk and irreversible investment together with uncertainty. The typical rule based on certainty or no sunk costs says to invest if the operating cost plus the cost of capital is less than the price: $C + rI < P$ or equivalently $(P - C)/I > r$. However, suppose future demand is uncertain so that future price is also uncertain. If you invest in a sunk and irreversible capital good and the price decreases sufficiently, you can be left losing money because the capital good cannot be used elsewhere. Thus, for sunk investments one expects a firm to have a rule of $(P - C)/I > mr$ where $m > 1$. Now TSLRIC sets the cost equal

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[11] An example may clarify this situation. Suppose that a customer of microprocessors approaches a manufacturer and wants to negotiate a price for a custom made chip which will require a dedicated sunk cost investment whose economic lifetime is 10 years. Under usual competitive situations, if the customer commits to buy a guaranteed number of chips over the next 10 years, the price will be much lower than if the customer only commits to buying the chips for 1 year. BOW's description of the basic principles of estimating TSLRIC (pp. 9-13) would lead to the same estimate regardless of whether the contract was for 1 year or 10 years. However, the efficient economic outcome and the price will very much depend on the contract terms of which party, in fact, does bear the risk. Thus, BOW's neglect of uncertainty is contradicted by actual market outcomes and does not correspond to economically efficient outcomes that are observed in competitive markets.

to C + rI so it sets m = 1, which is incorrect. The size of m depends on underlying economic factors and the amount of uncertainty as before, but as the above calculations show, m can be quite large.[12]

[*9*] 14. Thus, contrary to DOJ's claim, TSLRIC-based network element prices will set too low a signal for facilities-based investment. The new entrant, which also must account for sunk investment and uncertainty, will buy too much from the ILEC which reduces productive efficiency if the new entrant could have done the investment more efficiently.[13] Society's resources will be wasted.

15. Again, I point to two real world economic outcomes which this theory explains. When the US dollar exchange rate rose rapidly in the early 1980's, economists were puzzled that foreign imports to the US or investment in manufacturing capacity in the United States did not increase as quickly as economic theory would have predicted. According to purchasing power parity (PPP) calculation, the dollar was highly over-valued. However, when Baldwin and Krugman (1989) took account of sunk costs of manufacturing investment and uncertainty, they realized that a significant premium to the

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[12] Dixit and Pindyck (1992, p. 260) explain the entry decision: "If competitive firms adopted the rule of entering when the price reached P_0 [equivalent to the TSLRIC set price], they would earn a normal return only at those instants when entry was taking place -- they would earn lower return at all other instants. The average return over time would then be insufficient to justify the initial investment expenditure."

[13] BOW's discussion of entry decision and make-or-buy decision (p. 5) is correct when they say the expected costs of expansion or entry are compared to the expected incremental revenue. But with uncertainty the expected cost must contain a component which reflects the uncertainty combined with the sunk cost investment. TSLRIC does not capture this uncertainty, but instead assumes a certain outcome.

investment cost had to be taken account of, because the exchange rates could certainly decrease as well as increase. Similarly, for exit decisions from an industry, outdated economic theory says that a manufacturer should shut down if its variable costs exceed the price of the product. Yet, during recessions we see, for instance, that Ford continued to make cars despite suffering enormous losses (not accounting for depreciation). The explanation arises because Ford has tremendous sunk costs in its manufacturing plant and even more important sunk costs in its dealer network and reputation and name recognition with consumers. If Ford had shut down in 1982, much of this sunk investment would have been lost if Ford later decided to re-enter the industry. When demand increased again, Ford would have to make many new sunk investments to restart its operation. The modern economic theory of sunk costs and investment explains why Ford did not shut down. [*10*] The IXCs and DOJ make no mention of the sunk-cost effects in their argument for TSLRIC. This neglect of modern economic analysis causes them wrongly to claim that TSLRIC prices will lead to efficient entry decisions. In actuality, TSLRIC set network element prices will lead to too little facilities based entry and will lead to lost economic efficiency and a waste of society's resources.

C. The "Competitive Market" Standard

16. The DOJ (pp. 28-29) advances a "competitive market" standard for the provision of network elements to new entrants, CLECs. However, the DOJ adopts the perfect information and no uncertainty approach to competitive markets and ignores sunk costs. Thus, DOJ's advice is similar to a perfect competition type of outcome. It is important to recognize that no network industry ends up anywhere close to this outcome of perfect competition. Sunk costs and externalities which arise from networks ensure that the perfect competition outcome will not occur. Highly imperfect

competition is the expected outcome -- e.g. airlines in transportation, ATM networks in banking, credit payment networks, and operating systems for computers (where applications must interconnect). To attempt to impose a theoretical ideal through regulation, on a real world situation in which the ideal cannot occur because of technology, leads to inefficient economic outcomes.

17. The Telecommunications Act of 1996 establishes other factors which will make telecommunications depart even more from how even an imperfectly competitive industry typically operates. None of the industries discussed above has a universal service obligation, e.g. Microsoft is not required to make certain that 95% of residential customers have a computer and use Windows. Similarly, no airline is required to provide cross subsidies to residential customers by pricing below cost. No airline is required by Congress to charge the same amount for a 200 mile flight as for a 2000 mile flight (rate averaging). Nor are banks required to provide free service to a given group of customers as ILECs are required to do for information service providers. Thus, the "competitive market" ideal, in terms of perfect competition, is far from the actual situation, especially as applied to local exchange service obligations of [*11*] ILECs. As an economist, I certainly favor increased competition in telecommunications. However, a realistic view of the competitive structure engendered by the technology and regulatory and legislative obligations imposed on the ILECs provides the economic constraints in its policy recommendations. Neglect of these real world policy considerations is not the correct approach.

18. Similarly, the Hatfield model submitted by MCI assumes a "start from scratch" world where technology has never changed, no uncertainty exists, and no firm ever made an investment without correctly predicting how technology would change. However, in the real world of uncertainty and

asymmetric information companies do make mistakes. For example, the 1982 AT&T prediction that by the year 2000 only 1 million cellular subscribers would exist and the 1985 decision by MCI to sell off all of its cellular spectrum at about $25 per pop were both multi-billion "mistakes". Yet, the Hatfield study does not allow for these "mistakes", and instead says that the new entrants should get all of the benefits of uncertainty. Thus, Hatfield wants the ILECs to bear all of the risk and the CLECs to get all of the rewards of uncertainty.

19. Under this situation, the ILECs' incentive will be to invest too little and the 1996 Act's explicit goal "to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans" will not occur. Correct investment incentives must take account of the technological uncertainty and the sunk costs of investment to provide the correct economic incentives for ILECS and new entrants to invest.[14]

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[14] The Hatfield study's reliance on TSLRIC is incorrect for the same reasons that the IXC's and DOJ's reliance is incorrect. Further, the Hatfield study proposal would not allow for recovery of joint and common costs which the DOJ does recognize should recovered by the ILECs.

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[*5*] In a fully competitive local exchange market without carrier-of-last resort or ready-to-serve obligations, U S West would be free to negotiate mutually beneficial network build-outs for end-user customers or for resellers, based on term commitments and "take or pay" clauses which would allow U S WEST to recover the cost of its investment.

C. Embedded Costs and Uneconomic Depreciation of ILEC Assets

Several of the parties claim that the fact that incumbent LECs' embedded costs are in excess of TSLRIC is evidence that ILECs have not been operating efficiently.[4] In fact, there are two main reasons why incumbent LECs' embedded costs appear to be so much greater than TSLRIC. First, as will be explained in the next section, the gap is evidence of how grossly the Hatfield model underestimates TSLRIC. Second, ILECs' embedded costs are greater than even correctly estimated forward-looking costs because depreciation rates have been set at uneconomic levels by state regulators.

Regulators have consistently required that U S WEST use longer asset lives than it would have chosen for itself, which has resulted in accumulated "uneconomic" costs and potentially stranded investment. Table I below provides a point of

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[4] AT&T, for example, claims that "There is every reason to believe that ILEC architecture, sizing, technology, and operating practices, by contrast, have routinely departed from efficiency." AT&T's Comments in Response to the NPRM at 57-58, Docket No. 96-98.

comparison between U S WEST's regulated depreciation rates and the economic rates used by competitors for three different types of plant in the state of Washington. Clearly, in many instances, U S WEST is forced to depreciate its investments at uneconomically slow rates.

[*6*] Table I: Comparison of Depreciation Lives as of 1995 (in Years)

Company Name	Digital Switching	Digital Circuit	Fiber Optic Cable
AT&T	9.7	7.2	20
Electric Lightwave	10	10	20
Teleport	10	8	20
US WEST Intrastate rate in Washington	18	13	30

Source: U S WEST State Regulatory Filing in Washington

In a stable, regulated environment, prescribed lives protected consumers from rate shocks that could otherwise have been caused by early retirement of telephone plant, and the negative impacts of those prescribed lives were minimal: (1) competition was not harmed because competition was not a significant factor; and (2) shareholders were protected by regulatory accounting principles, which allowed U S WEST to set prices to recover the cost of capital investments, even after telephone

plan was retired. However, with competition emerging, state jurisdictions no longer offer a "monopoly franchise," and shareholders are at risk when depreciation rates are understated.

In competitive markets, depreciation rates reflect the true economic lives of the assets to which they correspond. Therefore, in competitive markets, embedded costs based on accurate economic depreciation rates are, by definition, equal to "forward-looking" costs, because economic depreciation rates anticipate and account for the changes in technology, substitute products and competitive conditions that affect the economic lives of assets. Thus, the fact that ILECs' embedded costs are so much greater than TSLRIC can only indicate that depreciation rates have continuously been set too low. Hence, in the current environment, the principles of causality and realism in cost estimation necessitate the use of economic depreciation lives, rather than the uneconomic lives prescribed by regulators, in estimating TSLRICs.

[*7*] The harmful effects of using artificially long prescribed depreciation lives are likely to increase dramatically in the near term. With the convergence of disparate technologies for providing local exchange services, it is highly likely that economic lives will shorten even further, increasing the disparity between prescribed and economic depreciation rates. For example, the upgrade of cable TV plants to offer interactive broadband services will drastically reduce the economic lives of U S WEST's local loops. U S WEST must also consider the increasing likelihood of stranded plant as competitors gain market share, especially if competitors are able to win discrete geographic areas, thereby displacing U S WEST as the primary facilities-based provided in those areas.

In an increasingly competitive telecommunications market, if U S WEST is able to make network investment decisions based on its own business strategy without asymmetric regulatory requirements, it will set its own depreciation lives based on its own best estimates of market conditions. If the company miscalculates, or if it chooses to depreciate its assets at an artificially low rate, it may very well have to write-off parts of its sunk investments.[5] However, all of the sunk investments and subsequent write-offs made by companies in competitive markets are dictated by market and technological forces, not regulatory policy. Thus, such companies are not entitled to protection from market-based write-offs.

However, these write-offs resulting from independent business decisions by unregulated companies are fundamentally different from those resulting from past regulatory policy decisions designed to reduce the cost of basic local exchange service. U S WEST should be allowed to recover embedded costs from investments it was required to make under its carrier-of-last-resort and ready-to-serve obligations, especially since the rates of depreciation have been intentionally slowed by regulators to keep local exchange rates down.

[*8*] D. TSLRIC Estimates Should Be Based on Realistic Assumptions

MCI contends that TSLRIC "should serve as the standard for rates charged for unbundled elements" and that "[t]hese rates should be established by the Commission as presumptive price

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[5] There are many instances in competitive industries where companies have misjudged the economic lives of their investments, thus temporarily overstating their profits until they were forced to write-off those assets. Coca-Cola, IBM, and Ford are good examples.

ceilings." MCI proffers TSLRIC cost estimates from the Hatfield model as "evidence" that "access rates are currently well in excess of economic cost."[6] In this section, I will show that the Hatfield model is based on highly naïve, fatally flawed assumptions about the cost of providing local exchange services, given the strict ready-to-serve obligations and service quality standards imposed on ILECs. In the last section of this reply affidavit, I will explain why, even if correctly estimated, TSLRIC should not be used as a price ceiling for any telecommunications service, including interconnection and unbundled network elements.

The AT&T/Hatfield conceptualization of TSLRIC is fatally flawed. According to AT&T:

> "The economic costs to be measured are the costs an efficient, cost-minimizing competitor would incur — i.e., the costs of assets that are optimally configured and sized with current technology and efficient operating practices. The past architecture, sizing, technology, or operating decisions of the IELECs should not serve as bases for calculating TSLRIC."[7,8]

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[6] MCI's Comments in Response to the NPRM at iii, Docket No. 96-98.

[7] AT&T's Comments in Response to the NPRM at 57-58, Docket No. 96-98.

[8] It should be noted that contrary to AT&T's assertion, some state commissions have already permitted the use of existing network architecture to estimate TSLRIC. For example, as defined in the Colorado cost and pricing rules, "[A]n estimate of total service long run incremental cost can be generated by assuming that the geographic locations of routes and

(continued...)

Yet in no industry I have studied is it possible to build capacity "optimally" in anticipation of future demand, technological change, etc. Airlines continue to fly older, less fuel efficient aircraft; manufacturers continue to use older production plants, even though newer, more efficient technology is available. Moreover, producers seldom build "whole new facilities" starting from scratch. It is far more common for capacity investments to be limited by current locations, existing technologies, and the need to modify, modernize and expand existing facilities. If AT&T were correct that competition drives prices to the "theoretical" minimum cost of production, no firm could survive – nor would any [*9*] firm invest in capacity in the first place. Competition tends to force prices toward those costs that are realistically achievable, given the realities and limitations of building and operating production facilities.

Additionally, the Hatfield model does not reasonably estimate TSLRIC given real world build-out requirements. The Hatfield model of TSLRIC divides the local exchange service area into six different cost zones based on differing population densities. However, in a highly unrealistic further simplification, the model assumes that customers are evenly distributed in each of the zones. This even distribution is clearly not realistic, and this misguided assumption serves to grossly underestimate real world costs of building local exchange networks. Additionally, the Hatfield model assumes all network build-outs occur in a greenfield environment, to serve new housing developments or

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[8] (...continued)
possible switching locations are the same as those available to the firm today and that the types of technological change in the future can be anticipated." Colorado Cost and Pricing Rules Adopted in Docket No. 92R-596T, Rule 2(45) (b).

office parks. Yet, in reality, a large share of telephone plant is not installed in greenfield situations. Many network build-outs occur as infills in previously built-out areas, for example, when old warehouses are converted to office suites or residential lofts, or when formerly single line residential customers begin demanding multiple lines for fax, modem and Internet access. Such retrofitting, which requires streets to be torn up and preexisting buildings to be modified, is far more expensive than the idealized greenfield build-outs assumed by the Hatfield model.

Moreover, the Hatfield model ignores the extraordinary asset-specificity of local distribution facilities by assuming high utilization rates. Telephone switching capacity and transport facilities are relatively fungible. If one end-user does not use a capacity increment, other end-users can use that increment. However, the local loop and its subcomponents, feeder, distribution and drop, are not nearly as fungible, particularly segments which are dedicated to specific users or geographic areas. For example feeder cables, which are dedicated to specific distribution areas (neighborhoods) are fungible within dedicated distribution areas but are highly asset-specific across distribution areas. Thus, if a neighborhood as a whole has higher than anticipated growth in demand for access lines, new feeder cables would have to be laid — an extremely costly process. Distribution and drop are asset-specific to smaller geographic areas and individual premises respectively. It is costly to redeploy distribution and drop (but less costly than laying new feeder cables).

[*10*] It is obviously much more costly to retrofit the network to provide additional lines than it would have been if it were possible to perfectly anticipate growth within and across distribution areas. As land use patterns change (from residential to commercial or from manufacturing to service

sector), demand for access lines can increase dramatically and unexpectedly, imposing unanticipated costs on the local exchange provider and making it very difficult to optimize their network design and build-out. These real world costs must be included in any total service incremental cost estimates for local exchange carriers. Because the Hatfield mode fails to do so, the cost estimates it generates vastly understate the true cost of providing local exchange service under efficient, but reasonably achievable operating conditions.

While the unrealistic and impractical assumptions mentioned above concerning whole builds in greenfield environments and overstated utilization rates are reason enough for rejecting any cost estimates from the Hatfield model, it has a number of other flaws, all of which, not surprisingly, bias downward its estimates of the TSLRIC of local exchange services and network elements. The Hatfield model:

> Incorporates modules from the Benchmark Cost Model (BCM) which exclude distribution plant in urban areas and other network components which have variable investment costs in the long run. These omitted costs are caused by the provision of local telephone service and should therefore be included in a TSLRIC analysis.
>
> Excludes product specific costs such as marketing and product management which are caused by a specific service and thus should be included in TSLRIC study.
>
> Assumes that the design and sizing associated with AT&T's interLATA toll network is relevant for U S WEST's local exchange network. Assumptions about the most efficient technology for connecting tandem switches does not accurately reflect traffic flow volumes

or utilization factors on U S WEST's local exchange network, which operates with much lower traffic densities than an long distance network.

Violates the "total service" aspect of TSLRIC by relying on inputs from the New Hampshire Telephone Incremental Cost Study for drops and switch maintenance expenses. That model only estimates costs for an incremental expansion of an existing service.

Given these obvious flaws and deliberate costing biases, it is not surprising that the TSLRIC estimates generated by the Hatfield model are well below the ILECs' embedded costs. If the TSLRICs were truly equal to those estimated by the Hatfield mode, the ILECs' existing facilities would not represent [*11*] an advantage to the ILECs, but rather a tremendous liability. Since ILECs' embedded costs are so much higher than the TSLRIC proposed by the Hatfield mode, new entrants would easily be able to take significant market share away from the ILECs by building new facilities at the Hatfield cost, well below the ILECs' costs, and then selling the services for the lower price that would result. If the Hatfield cost estimates were accurate, AT&T would not hesitate to build its own network. Yet, instead, AT&T demands unbundling because they claim the cost of building their own networks would be too high. In this sense, the cost estimates generated by the Hatfield model contradict the basic premise of unbundling: that because it is not economic for new entrants to build distribution plant to provide local exchange services. ILECs should be required to unbundle their facilities and sell them at TSLRIC.

Moreover, the price of residential exchange service is, in many areas of many states, well above the TSLRIC estimates of the Hatfield model, which suggests that entrants have an economic

incentive to enter the market by building their own facilities. What one observes, though, is that entrants are building facilities only in urban centers and other concentrations of high volume business users, not in residential areas. The reason for that pattern of entry and investment is straightforward: it costs far more to build local distribution plant in residential areas than the Hatfield model estimates. Indeed, I know for certain that U S WEST would gladly procure its distribution plant from Hatfield Associates at prices equal to the Hatfield TSLRIC cost estimates and delivered on a timely basis to protect against "held orders" or other service quality infractions.

The costs of recent additions to plant by U S WEST is a far better estimate of the costs of constructing local exchange facilities than estimates generated by a model based on highly unrealistic assumptions, despite AT&T's claim that "the economic costs to be measured are the forward-looking costs of providing the network element in question, and the ILECs' backward-looking book costs should rarely, if ever, be used as 'proxies' for those forward-looking costs."[9] Just as the forward-looking incremental cost of auto assembly capacity can be estimated by using last year's investment, including "new plants" and modernized or expanded plants, so too is U S WEST's recent investment [*12*] cost a reasonably good estimate of the "forward-looking" cost of local exchange service, because it reflects the actual and difficult field conditions in which and under which local exchange facilities are constructed. For example, the state of Colorado, U S WEST's average embedded cost of constructing a loop in 1995 was more than $30 per month. In contrast to the Hatfield model's average cost estimate of $8.66 per month, U S WEST's

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[9] AT&T's Comments in Response to the NPRM at 55-56, Docket No. 96-98.

embedded cost is a much better estimate of the forward-looking cost of efficiently building local loops.[10]

E. If TSLRIC Pricing And Other AT&T Requests Were Implemented, ILECs Would Be Forced Into Severe Financial Distress or Insolvency

AT&T, MCI and others advocate that prices should be set at TSLRIC to replicate conditions in competitive markets.[11] However, competition does not drive prices to the cost of the most efficient producer. An industry supply curve is upward sloping because it reflects differences in the cost of production, from the most efficient to least efficient capacity in the industry. The equilibrium competitive price is equal to the cost of the least efficient producer who is actually producing in the competitive market. In a competitive industry, therefore, one can observe that the least efficient producers earn profits below their cost of capital, while the most efficient producers earn profits in excess of their cost of capital. Were that not the case, there would be no incentive to increase efficiency by investing in new technologies or to expand capacity to meet growing demand.

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[10] See AT&T's Comments in Response to the NPRM, Hatfield Model Version 2.2, Release 1, p. 54.

[11] "Prices for telecommunications services should reflect the costs of those services, as they would in a competitive market. This means prices should be set at total long service [sic] long run incremental cost (TSLRIC). This standard will allow the ILEC's to recover the full, forward-looking costs of provide network elements including a reasonable return to capital." MCI's Comments in Response to NPRM at iii, Docket no 96-98

AT&T claims (and the FCC has agreed) that IXCs operate in a competitive market. AT&T also claims that prices in competitive markets equal TSLRIC. These claims therefore imply that AT&T's own prices are set at TSLRIC. However, it is evident that AT&T's interLATA prices can not possibly be set at TSLRIC. A comparison between AT&T's Tariff 12 rates and their basic residential rates shows a tremendous difference in the two prices — approximately 70 percent. This difference cannot be attributed entirely to billing costs. Nor can it be attributed to common or shared costs, since AT&T

[EX PARTE OR LATE FILED]

July 19, 1996

Mr. William F. Caton
Acting Secretary
Federal Communications Commission
1919, M Street, NW. Room 222
Washington, DC 20554

[Received Jul. 19, 1996]

RE: Ex Parte Presentation
CC Docket No. 96-98

Dear Mr. Caton:

Pursuant to the Commission staff's request, AT&T is submitting the attached response to the Reply Affidavit of Jerry A. Hausman that was appended to USTA's Reply Comments in this Docket. This response was prepared by Professors R. Glenn Hubbard and William H. Lehr of Columbia University.

Two copies of this Notice are being submitted to the Secretary of the FCC in accordance with Section 1.1206(a)(1) of the Commission's rules.

Sincerely,

/s/ Richard N. Clarke
Richard N. Clarke

Attachment
cc: J. Farrell
G. Rosston
G. Hubbard
W. Lehr

CAPITAL RECOVERY ISSUES IN TSLRIC PRICING: RESPONSE TO PROFESSOR JERRY A. HAUSMAN

R. Glenn Hubbard and William H. Lehr
Columbia University
July 18, 1996
[Received Jul. 19, 1996]

I. Introduction and Summary

In his reply affidavit for this proceeding,[1] Professor Jerry Hausman argues that "TSLRIC should not be the price for interconnection elements for two reasons: (1) it ignores fixed and common costs, and (2) telecommunications are mostly sunk costs." Hausman justifies this second reason using three basic arguments:

(1) TSLRIC prices fail to compensate incumbent local-exchange carriers (ILECs) adequately for past investments;
(2) TSLRIC prices are a theoretical construct which are not realized anywhere and will not be realized in the imperfectly competitive local-exchange markets; and
(3) TSLRIC prices will result in inefficient investment and production decisions in the future, leading to insufficient facilities-based entry.

As we explain below, each of Professor Hausman's arguments is incorrect. His first argument confounds two separate questions leading to unnecessary confusion and an erroneous conclusion. Because TSLRIC prices are forward-

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[1] See *Reply Affidavit of Jerry A. Hausman*, In the Matter of Implementation of Local Competition Provisions in the Telecommunications Act of 1996, CC-Docket No. 96-98, May 30, 1996.

looking, they ignore past investments of ILECs *by definition*. This is as it should be because, in competitive markets, only costs that are efficient on a forward-looking basis can he recovered in prices. To the extent that one can show that the ILECs should be awarded additional revenues as part of a "regulatory compact," these revenues should be treated analogously to the need to fund universal service. TSLRIC pricing of interconnection components is designed to induce efficient, competitively-neutral, non-discriminatory investment decisions, not to effect rent transfers or subsidies which are more efficiently and appropriately handled via a separate, competitively neutral mechanism (*e.g.*, a lump sum addition to the subscriber line charge). If these cross-subsidies and transfers are permitted to continue in the future by embedding them in component pricing, then local- exchange competition will not succeed and the Telecommunications Act of 1966 will have failed. While we do not accept Professor Hausman's implicit contention that such a "regulatory compact" did in fact exist, or that the ILECs failed to adequately recover costs that were due them, we do not wish to debate these matters here. This argument and the counterarguments against it are made more forcefully elsewhere.[2]

Hausman's second argument is that TSLRIC prices are inappropriate because they are a theoretical construct[3] and

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[2] See, for example, *Reply Comments of AT&T Corporation*, In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC-Docket No. 96-98, May 30. 1996, and June 3, 1996. As noted therein, the courts generally affirmed no obligation to include in the rate base all actual costs for investments which were prudent when made.

[3] Hausman states: "To attempt to impose a theoretical ideal through regulation on a real world situation in which the ideal cannot occur because

(continued...)

because local-exchange markets are not likely to become competitive. Professor Hausman argues that "highly imperfect competition is the expected outcome" (page 10) in a whole collection of network industries such as banking, airlines, and telecommunications. The presence of network "externalities" (page 10) accentuates the market power which accrues to an established incumbent and makes it all the more important that potential entrants be guaranteed efficient, nondiscriminatory, competitively neutral interconnection rights if competition is to survive. Not surprisingly, the industries mentioned by Hausman were at one time heavily regulated (in part to address interconnection and market power issues). Rather than refuting the logic of TSLRIC pricing, the fact that local-exchange markets are not competitive today offers a powerful inducement for its adoption. Moreover, the threat of market power associated with the ILECs' position as dominant incumbents makes it important to include an array of additional regulatory policies in order to facilitate effective competition (*e.g.*, imputation rules to protect against predatory pricing, promoting total service resale and reciprocal termination agreements).[4]

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[3] (...continued)
of technology leads to inefficient outcomes" (see *Reply Affidavit of Jerry A. Hausman*, note 1, *supra*, page 10).

[4] Throughout his reply affidavit, Hausman makes reference to industry comparisons which do not fit the circumstances of local-exchange markets and are of little relevance to the present proceedings. Occasionally, his examples seem to refute the very point he is trying to make. For example, Hausman claims: "no airline is required by Congress to charge the same amount for a 200 mile flight as for a 2000 mile flight (rate averaging)" (see *Reply Affidavit of Jerry A. Hausman*, note 1, *supra*, page 10). We and AT&T agree that historical regulations have distorted the pricing of retail telephone services; however, this has nothing to do with the appropriateness
(continued...)

Hausman's third argument is the most complex and, if it were true, the most relevant for the present proceedings; we devote the bulk of our comments to its refutation. Briefly, the essence of Hausman's argument is that TSLRIC-based prices will lead to inefficient investment decisions because they fail to take account of (1) *expected* economic depreciation (which exceeds allowed depreciation because of expected technical progress); and (2) the risk associated with *unforeseen* changes in final product demand and prices, capital goods prices, and interest rates. The former point is incorrect, as we explain below. To explain the effects of the latter effect, Hausman provides a simplified and highly stylized example based on contemporary investment theory. Most of the examples and empirical research he cites are designed to show the validity of this theory and its applicability in the modern analysis of efficient investment behavior. Hausman's principal error, though, is to redefine TSLRIC incorrectly to create a straw man, which he can then discredit with highly stylized examples to a complex theory and unsupported and unexplained references to his own empirical estimates.

In Hausman's notation, he implicitly argues that TSLRIC is equivalent to setting component prices equal to $pT = rI + C$, where r is the ILEC's risk-adjusted cost of capital, I is the total investment cost, and C are the operating costs. Hausman argues that even in a world of certainty, prices would need to he higher than P^T to compensate firms for expected economic depreciation and declines in the price of the capital goods. In such a world, the correct pricing rule would be to set price higher than implied by Hausman's (incorrect) definition of TSLRIC. (In the first part of his reply affidavit, Professor

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[4] (...continued)
of TSLRIC for the pricing of unbundled network elements and for estimating the avoided cost.

Hausman also conveniently assumes that $C = 0$, which has the effect of enlarging on a percentage basis his estimate of the potential understatement of TSLRIC costs.)

Hausman then notes that we do not live in a world of certainty. There may be unforeseen changes in technical progress or factor prices (in addition to the anticipated changes noted above), and perhaps more important, unanticipated changes in firm demand (both because of uncertainty in aggregate demand, and, because of competition, uncertainty in the firm's future market share). By itself, this uncertainty does nothing to change his earlier analysis (since Hausman and others typically assume firms are risk-neutral investors). However, if one assumes that the total incremental cost of investing in local-exchange plant is irreversible and could be postponed, then there is an "option value" associated with "waiting to invest." In such cases, there may be an added "opportunity cost" to investing today which should he taken into account when a firm makes its investment decision.

There are a number of problems with Hausman's application of modern investment theory to critique TSLRIC. First, Hausman has assumed a definition for TSLRIC which is incorrect; as a result, he falsely accuses TSLRIC of failing to account for expected depreciation and possible declines in investment goods prices. He sets up a theoretical straw man by choosing to redefine TSLRIC so that is excludes costs which are clearly included in the TSLRIC concept. He then proceeds to show how failure to include these costs (which actually are included) leads to a gross underestimation of costs. The actual correction is an empirical issue which Hausman addresses by referring to largely unsupported and unexplained examples. On closer inspection, we show how these examples help to refute, rather than support Professor Hausman's arguments. As an empirical matter, we conclude that there is no basis of support for the doubling (or, in some cases, more than doubling) of the

appropriate user cost of capital as suggested by Hausman. If any adjustments to conventional derivations and estimates of the cost of capital are required to address the issues raised by Hausman, such adjustments would be modest.

II. The Logic of TSLRIC

In elementary economics courses, students learn that there are two types of costs in the short run: variable costs, which change with the level of production, and fixed costs, which do not. Economic efficiency requires that prices be set equal to marginal costs so that only consumers who value consumption at least as much as what it costs society to satisfy their demand will actually purchase the good or service. Business school students learn further that profit-maximizing firms should ignore fixed costs in the short run since they are irreversible or sunk. In the long run, all costs are variable and reversible because firms can revisit their decision to continue operating in the industry (*i.e.*, firms could enter or exit the industry). Whether a cost is variable, fixed, or sunk depends on the horizon. In the simplest decision-making framework, a firm chooses whether to enter or exit an industry at a single point in time, which divides the world neatly and unambiguously into the long run (before deciding whether to enter) and the short run (after the firm has decided). The efficient entry decision is for the firm to enter only if the expected future price (post-entry) is greater than the post-entry average variable costs which will be incurred plus the post-entry fixed costs which will be sunk once the firm has entered. The "$P = MC$" rule still applies as long as one understands that P now refers to the expected future price and MC to the long-run incremental cost.

In the real world, decisions occur continuously. Firms may decide to invest, disinvest, or wait to make a decision at a later time, or to reverse wholly or partially an earlier decision

(*e.g.*, by selling off assets). Information is continuously arriving and firms revise their dynamic investment strategies. In this more general framework, the "$P = MC$" rule must be applied by interpreting P as the expected average present value price of output and MC as the "Total Service Long Run Incremental Cost," or TSLRIC.[5]

The TSLRIC includes all costs which are relevant to the firm when it decides whether to invest in additional capacity (*i.e.*, enter). It is forward-looking by construction because it ignores all costs which may have been incurred in the past and are now sunk. It includes all future costs which result from the decision to enter irrespective of whether they are fixed or variable, or whether they will be sunk following the firm's decision. Because the future is uncertain, the TSLRIC must and does account for uncertainty with respect to technological progress, factor prices, firm demand, and interest rates.

To the extent some of the costs incurred will be sunk, new information arrives continuously, and it is possible to postpone the investment decision until some of the future uncertainty is resolved, there is an option value associated with "waiting to invest," in postponing incurring the sunk investment component. The value of this option should be included in the TSLRLC. The unwieldy acronym "TSLRIC" was created in order to make sure that all relevant, forward-looking incremental costs would be included. Because Professor Hausman conveniently redefines TSLRIC to exclude costs which are clearly included when a proper definition is used, Hausman presents himself with a theoretical straw man which

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[5] For a more extensive discussion, see *Reply Affidavit of William Baumol, Janusz Ordover, and Robert D. Willig*, In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC-Docket No. 96-98. May 30, 1996, Appendix D.

he then attempts to cut down via recourse to contemporary investment theory.[6]

The acronym "TSLRIC" emerged expressly to deter such simplistic interpretations of the appropriate incremental cost concept to use. It is obvious that Professor Hausman's definition of TSLRIC as equal to just "*rI + C*" is not applicable to the world of telecommunications, which faces significant recurring capital investments which must be recovered for a firm to be financially viable. Thus, Professor Hausman's theoretical criticism of TSLRIC only applies to incorrectly estimated TSLRICs.

Hausman claims that TSLRIC fails to include sufficient allowances for depreciation, and therefore understates efficient prices even in a world of certainty. In order to estimate TSLRIC, one must perform a discounted cash flow analysis of the future costs associated with the decision to invest. This is exactly what the Hatfield model is designed to do.[7] One-time costs associated with the acquisition of capital goods are amortized over the economic life of the asset using the user cost of capital (see below), which requires accounting for both

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[6] Hausman states on page 4 that "[p]roponents of a TSLRIC price for network elements are attempting to establish a single price over a long period of time." This is not true. TSLRIC is a conceptual basis for estimating forward-looking efficient prices on an ongoing basis. The Hatfield model operates very much in this spirit. For example, if technological progress occurs, it would be tracked in the ongoing updating and periodic review of TSLRIC as estimated by the Hatfield model. The Hatfield estimates could then be used to support decisions made by regulators in their periodic review of prices.

[7] For a description of the Hatfield model, see *Reply Comments of AT&T Corporation*, In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC-Docket No. 96-98, May 30, 1996, Appendix D.

expected capital good price changes and economic depreciation. These effects and the option effect discussed above are incorporated in TSLRIC calculations, and are reflected in the service lives and discount rates used. Perhaps recognizing the invalidity of his claim that, as a theoretical model, TSLRIC neglects these costs, Hausman then attacks the Hatfield model for using parameter estimates based on historical regulatory proceedings, implicitly arguing that the service lives assumed were too long and the discount rates were too low. If true, this would underestimate true incremental costs. However, Hausman provides no evidence that these parameters are biased in the direction he claims, as we describe in section IV. Moreover, attacking specific parameter estimates is not equivalent to attacking a methodology. It is possible to reestimate the Hatfield model using alternative assumptions regarding economic lives and discount rates.

Hausman uses historical data for declines in switch prices from $200 per access line in 1987 to $80 today to demonstrate the importance of including expected changes in capital goods prices. This is misleading on three counts. First, even if one agrees with Hausman's assessment of parameter estimates based on historical rate proceedings, the TSLRIC estimates would still reflect a partial accounting for economic depreciation. Second, TSLRIC is supposed to be based on forward-looking costs. The 1987 price is only interesting in so far as subsequent price declines were unforeseen (which is not obvious) and it may assist in estimating further price declines which should be reflected in the choice of the discount rate and expected economic life for switch assets (which may end up being the same as those used in the Hatfield model). Third, Hausman focuses on the decline in switch prices, which reflect a much smaller share of total plant in service than is contributed by loop facilities. Because the much more significant nonrecurring costs of loop facilities has declined quite slowly

or may even have increased, it is not surprising that Hausman chose to focus on switch prices.[8]

III. Irreversible Investment Under Uncertainty

Hausman begins his analytical treatment of the effect of sunk cost and irreversibility on efficient pricing with a mischaracterization of the role of the user cost of capital in the determination of TSLRIC. Absent taxes, the familiar user cost of capital in the neoclassical model is given by:[9]

$$\textit{User cost of capital} = P_k(r + \delta - \Pi_k) \quad (1)$$

where P_k is the relative price of the capital good purchased, r is the risk-adjusted discount rate,[10] δ is the exponential rate of expected depreciation, and Π_k is the expected exponential rate of change in the relative price of the capital good. Equation (1) has a simple interpretation: the user cost of capital is the financial cost of investing funds in a project plus the depreciation of the value of the capital good. Hence Hausman's

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[8] See *Reply Affidavit of Lee L. Selwyn and Patricia D. Kravtin*, submitted as Appendix C of *Reply Comments of AT&T Corporation*, In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC-Docket No. 96-98, May 30, 1996.

[9] The original derivation of the user cost of capital in the neoclassical model of investment appears in Dale W. Jorgenson, "Capital Theory and Investment Behavior," *American Economic Review* 53 (May 1963), pages 247-255; for a review of the literature since then, see Kevin A. Hassett and R. Glenn Hubbard, "Tax Policy and Investment." Mimeograph, Columbia University, 1996.

[10] The conventional approach to determining the risk-adjusted discount rate is to apply the Capital Asset Pricing Model (CAPM). The discount rate in the CAPM is the sum of the risk-free return and the product of beta and the equity risk premium.

characterization of the user cost of capital implicit in TSLRIC is not correct in so far as he claims that it fails to account for expected changes in prices. Note that while it follows that expectations of falling capital goods prices make straight-line depreciation calculations inappropriate, Hausman's suggestion that depreciation expenses should therefore be higher in all years is incorrect. If capital goods prices are expected to decline (with no change in useful lives), depreciation should be higher in the early years of the life of a capital good and lower in the later years.[11] In addition. Hausman provides no evidence that the prices of capital goods purchased by the ILECs are expected to fall at increasing rates in the future. Indeed, any such evidence would appear inconsistent with the very modest productivity rates that the ILECs' have forecast in the Commission's current price cap proceeding (CC Docket No. 94-1).

The basic neoclassical model has some limiting features, as the research to which Hausman refers suggests. In particular, it assumes that firms cannot delay investing in a particular project (they must undertake the investment or lose the opportunity). Further, it assumes that investment projects are reversible; that is, the capital can be resold in efficient secondary markets. A recent line of inquiry has criticized these assumptions, stressing that firms do often have the option to delay — and, in the presence of certain forms of uncertainty, that option is a valuable one.[12] The second area of emphasis is

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[11] This point has long been recognized in this context; see, for example, Michael Crew and Paul Kleindorfer, "Economic Depreciation and the Regulated Firm Under Competition and Technological Change," *Journal of Regulatory Economics* 4 (March 1992).

[12] In addition to the option value of delay for ILEC's investments, Hausman notes (on page 2) that the Telecommunications Act of 1996 gives

(continued...)

that investment is irreversible; that is, once a capital good is committed to a project it has no resale value.[13] With demand uncertainty and irreversibility, the user cost of capital is augmented by an additional term, raising the value relative to the neoclassical benchmark under certainty.

In the example of Robert McDonald and Daniel Siegel considered by Hausman,[14] the value of a project, V, evolves according to a geometric Brownian motion with drift:

$$dV = \alpha V dt + \sigma V dz, \quad (2)$$

where dt is a time increment, dz is the increment of the Wiener process, and α and σ are constants. The stochastic process for V describes the arrival of new information over time and is consistent with an uncertain future value of V.

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[12] (...continued)
the CLECs the right, though not the obligation, to use ILECs' capacity investment — thereby granting them an option. While this is true, it is also more generally true that the ILECs also gave their traditional local-exchange customers such "options." Hence as long as prior TSLRIC calculations incorporated adequate capital recovery, substantial additional changes are not warranted.

In contrast to Hausman's unsubstantiated assertion that such options are a one-way bet in favor of the ILECs, should equipment prices increase in the future, TSLRIC would rise and ILECs may increase prices for unbundled elements in the future. Hence there is no one-way bet in favor of the CLEC.

[13] For reviews of models in this line of inquiry, see Avinash Dixit and Robert S. Pindyck, *Investment Under Uncertainty*, Princeton: Princeton University Press, 1994; and R. Glenn Hubbard, "Investment Under Uncertainty: Keeping One's Options Open," *Journal of Economic Literature* 32 (December 1994), pages 1816-1832.

[14] See Robert McDonald and Daniel Siegel, "The Value of Waiting to Invest," *Quarterly Journal of Economics* 101 (November 1986), pages 707-723.

The analytical advantage of this setup is clear from the perspective of Hausman's argument. The investment opportunity considered by the firm is a call option with no expiration date; that is, the firm has the right, though not the obligation, to undertake the project at a pre-specified cost of I. At the same time, this simple setup — on which Hausman relies — has some drawbacks in describing typical investment projects. It assumes that the cost of investment is always I and *infinite* delay is possible, a suspect assumption for telecommunications markets. Also, if there are variable costs, the process for V may not be geometric Brownian motion even if that for the output price is. Finally, if the firm had competitors (Hausman's example derives from the case of a monopoly firm), the process for V may even be more complicated. We return to these concerns below.

In the conventional neoclassical criterion, the threshold value, V^*, is given by $V = I$; the firm invests up to the point at which the cost of investment just equals its value to the firm. The solution to the McDonald-Siegel problem yields a threshold value, V^*, for the project at which the firm should invest:

$$V = [\beta_1/(\beta_1 - 1)]I. \quad (3)$$

The basic intuitive point is this: Irreversibility and the possibility of delay generate a range of inaction (not present in the neoclassical model) in which $V > I$, yet the firm does not invest.[15] (This is because in the solution $\beta_1 > 1$, $[\beta_1/(\beta_1 - 1)] >$

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[15] It is important to note that this line of research excludes from consideration strategic motivations in capacity investment — for example, strategic advantages accorded to first movers. Dixit and Pindyck agree that such concerns limit and may reverse the option value of waiting to invest, implying the firm may actually want to invest early, not late (see Avinash

(continued...)

I and $V > I$.) The value of foreclosing the option to delay must be included in the cost of capital, thereby raising the hurdle rate for irreversible investment under uncertainty. This value arises from an asymmetry: delay — waiting for new information — engenders small costs (because the firm is assumed to be able to make the investment later) and potentially large benefits (because costly errors may be avoided).

What are the implications of uncertainty and irreversibility on the threshold output for price for investment? This question pierces the generality in the process described by equation (2) by specifying a source of fluctuations in value — price uncertainty. Suppose that the proposed project produces a physical flow of one unit of output each period in perpetuity. The price depends on the inverse demand function $P = YD(1)$, where D is a measure of nonstochastic flow demand and Y is a stochastic shift variable. In the simplest case, with no variable costs of operating the project, one can write a process for P reminiscent of the geometric Brownian motion used earlier to study V:

$$dP = \alpha P dt + \sigma P dz \quad (4)$$

In this case, the solution for the threshold price at which investment should occur, P^*, equals $[\beta_1/(\beta_1 - 1)]$ times the Marshallian price.[16] Again, there is a range of inaction in which price exceeds long-run incremental cost with no response of investment or entry.

How large is the wedge between traditional net present value investment criterion and that in Hausman's example?

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[15] (...continued)
Dixit and Robert S. Pindyck, note 13, *supra*).

[16] See Avinash Dixit and Robert Pindyck, note 13, *supra*, Chapter 6; and R. Glenn Hubbard, note 13, *supra*, page 1823.

Without going into algebraic detail, we can indicate some channels. First, as uncertainty about future returns (measured by σ) rises, the wedge $[\beta_1/(\beta_1 - 1)]$ also rises. Second, all else being equal, an increase in the discount rate, r, increases the wedge. Third, for a given discount rate, r, an increase in the trend value growth α increases the wedge. In the new solution, the user cost of capital rises by an amount equal to $P_k(\frac{1}{2}\beta_1\sigma^2)$.

Under parameter values given by Dixit and Pindyck[17] Hausman conjectures that $[\beta_1/(\beta_1 - 1)] = 2$, so that $V = 2I$. He then concludes that

> "[a] TSLRIC calculation which ignores the sunk cost feature of telecommunications network investments would thus be off by a factor of two. Using parameters for ILEC and taking into account the decrease in capital prices due to technological progress (which Dixit and Pindyck assume to be equal to zero in their calculation), I calculate the value of $m[\beta_1/(\beta_1 - 1)]$ to be around 3.2-3.4."[18]

Hausman offers no justification for his application of the basic McDonald-Siegel problem to the telecommunications case under consideration, nor does he offer any justification for the parameter values he assumes. The major problems with Hausman's calculations fall into two categories, relating to the inapplicability of his simple example to pricing in local-exchange markets and the false characterization of all local-exchange investments as irreversible.

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[17] See Avinash Dixit and Robert S. Pindyck, note 13, *supra*, page 153.

[18] See *Reply Affidavit of Jerry A. Hausman*, note 1, *supra*, page 6.

In the following three subsections, we justify our critique of Hausman by examining his application of the theory more closely. We first review the theory Hausman cites and show how his choice of examples and parameter assumptions bias his estimates in favor of amplifying his claim that TSLRIC understates true investment costs. We then show how a slightly different analytical model — one which may more accurately reflect the threat of future competition — dramatically reduces Hausman's estimate. The essence of this model is to question the reasonableness of assuming with Hausman that local-exchange investments by the ILEC might be postponed indefinitely. Finally, we argue that Hausman's characterization of all ILEC investment as irreversible is inappropriate and grossly overstates whatever effect irreversibility may have on estimates of TSLRIC.

A. Problems with Hausman's Application of Irreversibility and Uncertainty

In order to take Hausman's example seriously, one would first have to believe that the assumed parameter values are reasonable. The example cited above assumes that there are no variable (operating) costs and that the standard deviation of the annual rate of return on local-exchange investments is 20 percent. Surely, some juslification of these assumptions (taken from an abstract general example from Dixit and Pindyck) is necessary.

Second, as Hausman notes,[19] in the presence of variable costs, C, the investment criterion implied by the new view is:

$$P = mrI + C, \quad (4)$$

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[19] See *Reply Affidavit of Jerry A. Hausman*, note 1, *supra*, page 8.

where $m = [\beta_1/(\beta_1 - 1)]$.[20] The ratio of this price to the Marshallian (neoclassical) price of "$rI + C$" is:

$$Ratio\ of\ Prices = (mrI + C)/(rI + C) = 1 + [(m - 1)rI]/(rI + C). \quad (5)$$

Hence the size of the operating costs is important for determining the wedge implied by Hausman's calculations. If $m = 2$ - as in Hausman's example - and operating costs are twice as large as capital costs - a more realistic assumption for LECs - the ratio of the prices falls from 2 down to 1.33. Obviously, one could experiment further with parameter values and so produce a range of price ratios in this example.

In some respects, the wedge between the investment criteria in the neoclassical model and Hausman's example is likely to be at its upper bound in geometric Brownian motion examples in which delay can arbitrarily long. While Hausman's example has virtually no relevance for analyzing local-exchange investments, Dixit and Pindyck offer a more germane example which allows for the possibility that the value of the investment, V, will decline discontinuously at some random time in the future. Intuitively, one can think of this as applying to the case where the incumbent local-exchange monopolist has a window of opportunity before other competitors enter and reduce profits and V. Analytically, Hausman's example would be augmented by the possibility of a downward Poisson jump, which would require modification of equation (2) as follows:

$$V = \alpha V dt + \sigma V dz - V dq, \quad (6)$$

where dq, an increment of a Poisson process with a mean arrival rate λ, is independent of dz. When the "jump" occurs, q declines with probability one by some fraction θ (between zero and one). Intuitively, while V fluctuates (with geometric

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[20] The example assumes that, in Equation (1), $P_A = 1$, $\delta = 0$, and $\Pi_A = 0$.

Brownian motion), over each interval (dt), there is a probability (λdt) that is will drop a fraction of the original value ($1 - \theta$) and continue fluctuating (with geometric Brownian motion) until the next event occurs. In this case, holding other parameters constant, the option value of delay falls relative to the pure geometric motion example. Using Hausman's calculation as a benchmark, even a 20 percent chance of a loss of economic profits reduces the value of m from 2 to 1.33.[21] While one can obviously design many versions of this experiment, one point is clear: The example used by Hlausman is quite special and overstates the effect of uncertainty and irreversibility on the user cost of capital and the efficient price.

B. Problems with Hausman's Fxample in a Competitive Setting

Hausman's example refers to the problem of a monopolist deciding to invest. For researchers and practitioners interested in empirical applications to telecommunications, however, the lessons of recent investment models would be more compelling if couched in an industry equilibrium. This is because - as a result of market forces and the Telecommunications Act of 1996 - incumbents and potential entrants are engaged in a competitive struggle. The concept of irreversibility is also perhaps more appropriately analyzed at the industry level because the liquidity of most assets in place is surely greater within than outside the industry.

To see the need for this distinction, suppose that investment is completely irreversible and firms expect an industry-wide expansion of demand. A given firm recognizes the qualitative implications of the favorable demand shift for the industry prices and would like to increase its capital stock.

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[21] See Dixit and Pindyck, note 13, *supra*, page 173

Of course, the firm understands that other firms will not increase irreversible investment by as much as a monopolist. By contrast, an unfavorable shift in industry demand has a larger effect relative to the monopoly case. Given the assumption (as in Hausman) of complete irreversibility, all firms suffer because exit is not possible. There is, then, an asymmetry in the competitive response to uncertainty because the firm understands that an idiosyncratic demand shift does not imply similar fortunes for other firms, hence the firm behaves like a monopolist.

With regard to Hausman's example,. the "option value" argument becomes more tenuous. Intuitively, there is some price $\underline{P}$, above which entry occurs. Hence any one firm views the price process as described by geometric Brownian motion - as in the Hausman example - as long as $P < \underline{P}$; the price cannot go higher without triggering entry and a price decline.

There are important differences between the cases of monopoly and competitive equilibrium. First, while the monopolist's view of the price process is not affected by potential entry (at least in the example), the competitor's view is. An opposing second effect arises because the monopolist has an option value of waiting, while the competitive firms do not (in competitive equilibrium, the option value is zero).[22] To summarize, while the investment models emphasized by Hausman offer useful insights into determinants of investment, one must be careful to match the design of such models to the particular industry equilibrium being studied.

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[22] It is still the case in this example that the threshold price for entry is above the usual Marshallian level. In Section III C that follows, however, we take issue with the claim that the ILEC's investments are largely irreversible.

C. Problems with Characterization of all Local-Exchange Investments as Irreversible

Hausman's estimates of higher hurdle rates and prices for LECs require both that investment be irreversible *and* that demand and prices fluctuate significantly. Indeed, Hausman assumes incorrectly that all of the costs associated with local-exchange investments are sunk. This is not true. As already noted, there are significant recurring variable and fixed operating costs. These costs would be avoidable if the firm subsequently decided to exit the industry. More important, while some of the plant investment may not be usable in another application, this is not true of all of the investment. For example, much of the switch and switching center investment is clearly not irreversible. Switches can be moved to new locations and the end-office real estate can be sold. Rights of way, conduit, and even excess wire-line facilities, which may face reduced demand for ordinary telephone lines, may be sold for other uses (such as delivery of video to the home via technologies such as ADSL).[23] To the extent that investments

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[23] Hausman does not raise another depreciation issue arising from lumpy investments. Because of the discrete nature of many local-exchange investments, it is likely to be efficient to live with underutilization of an asset for a period of time, thereby having capacity to exploit growing demand and realize economies of scale. Conventional regulatory depreciation policy, then, forces current customers to pay for a portion of the capacity put in place to serve future customers. When regulation permitted a local-exchange monopoly and controlled lines of business of the local-exchange firm, current and future customers had significant overlap, so that conventional depreciation policy may have created few distortions However, as local-exchange firms invest for future lines of business, this cross-subsidy made possible by depreciation policy is inefficient. Hence

(continued...)

in local plant are reversible, they do not need to recover the opportunity cost associated with the option to wait to invest (*i.e.*, $m = 1$). Hausman's model assumes that the entire investment, I, is irreversible. Because the ILEC could always sell its plant to another firm, a portion of this investment is clearly recoverable. Indeed, at times, ILECs even sell entire exchanges.[24] Finally, evidence about ILEC depreciation suggests that most of the capital stock invested prior to 1990 will soon be replaced.[25]

Using the logic of option values of investment, Hausman argues that a TSLRIC-based calculation gives something free to entrants - the option - while forcing the ILEC to bear the cost of the option. Again, the premise of this argument is incorrect. The firm should use the correctly calculated TSLRIC as a hurdle rate when deciding whether to expand capacity. Presumably, this is what the ILECs did when they installed their current stock of plant and equipment. Indeed, most of the ILECs' plant and equipment was installed after 1990, a period in which it is implausible that the ILECs

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[23] (...continued)
costs of capacity put in place for future services should not be included in the costs of unbundled elements for local-exchange service. TSLRIC-based pricing would for example exclude such costs.

[24] For example, the Iowa Commission recently approved the sale by US West of all of the physical assets associated with twenty-three exchanges. See *Order Granting Motion to Strike, Approving Settlement Approving Discontinuance, Approving Transfer of Certificates, and Terminating Docket,* Docket No. SPU-96-3, State of Iowa, Department of Commerce, Utilities Board, May 30, 1996.

[25] See *Reply Affidavit of Lee L. Selwyn and Patricia D. Kravin,* note 8, supra.

failed to anticipate more competitive local-exchange markets over the economic life of the plant and equipment.[26]

Finally, the suggestion that few of the costs considered in TSLRIC are sunk may at first seem at variance with the argument that there are significant entry barriers in local-exchange services. After all, if there are no sunk costs, then shouldn't the markets be contestable? The answer to this is no, and the apparent confusion stems from confusing TSLRIC with the cost standard which would be used by an incumbent monopolist formulating entry-deterring pricing strategies. For a monopolist ILEC anticipating a price war, the horizon is much shorter than for the decision to enter, exit, or invest in additional network capacity. Within this shorter "price war" horizon, many of the ILEC's costs will be properly construed as unavoidable and hence sunk. This assessment of the ILEC's strategic options (in the absence of regulatory controls) would be known to both the ILEC and the entrant. The entrant, however, would face a significant asymmetry of information (leading to a higher discount rate) and greater

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[26] See *Reply Affidavit of Lee L. Selwyn and Patricia D. Kravtin*, note 8, supra. Two other conclusions of the study by Selwyn and Kravtin (quoted from pages 3 and 4) undermine Hausman's argument:

- ILEC efforts to expand the market for additional residential lines and other discretionary services required the ILECs to design and construct for more extensive feeder and distribution infrastructure (and expand far greater aggregate capital investments) than otherwise would have been required to provision basic local-exchange service and appear to overwhelm simple growth in basic local exchange line demand as a principal investment driver.
- ILEC strategic positioning in the market for advanced and broadband digital services has resulted in the ILECs significantly increasing feeder facilities relative to those actually required to meet demand for basic local-exchange lines and other POTS services, and provides a far better explanation of capacity expansion than simple POTS demand growth.

demand uncertainty. Also, the entrant will need to invest in significant one-time retail-related expenses which are not an issue for the ILEC, and in any case, would be excluded from the computation of the TSLRICs for unbundled network elements. This fundamental asymmetry implies that the entrant would perceive entry (followed by a potentially prolonged price war with the ILEC) as involving high sunk costs (over the duration of the price war) and could be effectively deterred from entering.

IV. Implications for Regulatory Policy Toward Capital Recovery

Our analysis demonstrates that Professor Hausman's strong claims about effects of capital goods price declines and option value of delay on the user cost of capital and efficient prices are overstated. Conventional derivations of the user cost of capital already treat the former through accelerated depreciation, not higher capital recovery allowances in all future periods. While Hausman's option value arguments have merit in the example (unrelated to telecommunications) that he poses, they do not imply the need for large increases in capital recovery parameters used to calculate TSLRIC prices.

Our analysis suggests no need to change existing procedures used in the regulatory process to determine required rates of return and the user cost of capital. Indeed, in offering guidance to state regulatory commissions, the Commission can suggest that state commission staff turn to financial markets for analytical rigor. As suggested by the logic of the CAPM described earlier, to the extent that the transition to competition raises the nondiversifiable risk borne by LECs' shareholders,

the required rate of return on LECs' equity rises.[27] However, Wall Street telecommunications analysts will subsume the effects described by Hausman in their expectations of and discounting of and LECs' future earnings. Estimates by these analysts form the basis for discounted cash flow estimates of the cost of equity capital that have typically been relied on by Commissions.[28] Thus, current Commission practices already address Professor Hausman's substantive concerns.

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[27] Because the literature on option values in investment decisions is relatively new, there is little empirical evidence to suggest that required rates of return incorporating option values differ significantly from required rates of return predicted by the CAPM. Indeed, Vivek Ghosal and Prakash Loungani find little effect of price uncertainty on industry investment except for industries with almost no concentration. Ricardo Caballero and Robert Pindyck estimate for U.S. industries generally "that a doubling of industry-wide uncertainty raises the required rate of return on new capital by about 20 percent." See Vivek Ghosal and Prakash Loungani, "Product Market Competition and the Impact of Price Uncertainty on Investment: Some Evidence from U.S. Manaufacturing Industries." *Journal of Industrial Economics* (June 1996), pages 217-228: and Ricardo Caballero and Robert S. Pindyck, "Uncertainty, Investment, and Industry Evolution," Discussion Paper, Massachusetts Institute of Technology, September 1995.

[28] See the Commission's *Order* on CC Docket No. 89-624, or Appendix D of AT&T's *Comments* in CC Docket No. 94-1, filed May 9, 1994 for a brief description of how a discounted cash flow calculation is performed for the LECs.

Depreciation and Capital Recovery Issues

A Response to Professor Hausman

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I. INTRODUCTION

In his May 30 Affidavit to the Commission Jerry Hausman raises two issues concerning appropriate capital recovery costs incorporated into TSLRIC-based rates for unbundled elements of local telephone service.[1] He argues that (1) TSLRIC studies are inherently incapable of correctly dealing with depreciation when the price of capital goods is expected to fall over time,[2] and (2) there is a substantial option value that ought to be, but is not, included in the capital recovery component of TSLRIC costs.

Regarding the depreciation issue, we conclude that Hausman is simply wrong in his claim that TSLRIC can accommodate nothing but straight-line depreciation. When all reasonable evidence indicates that the prices of capital goods can be expected either to fall or rise, it is straightforward to use other-than-straight-line depreciation in TSLRIC capital recovery calculations. Indeed, depreciation schedules that appropriately reflect the expected trends in the price of capital goods can produce higher prices in some settings, and lower ones in others, but in all cases prices that more accurately reflect true scarcity.

Regarding the treatment of options and their value in determining appropriate capital recovery prices, we find Hausman's discussion neither informative nor helpful. We readily recognize that the ILECs do, when they make any

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[1] See *Reply Affidavit of Jerry A. Hausman*, In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, CC-Docket No. 96-98.

[2] Hausman asserts that ". . . a TSLRIC calculation . . . assumes that the price of capital goods does not change over time." *Ibid.*, p. 4.

investment, create options for their customers. But this is true whether the CLECs are among their customers or they have only their traditional customers. Once this is acknowledged, there is no reason to alter the CAPM-based cost of capital estimates that are currently used. If these models previously produced satisfactory capital recovery for the ILECs, they still should. Only in limited circumstances, which we discuss, may any adjustment be warranted

II. DEPRECIATION

TSLRIC studies can incorporate other-than-straight-line depreciation in a straightforward way. Thus Hausman's criticisms of TSLRIC raise empirical questions, but do not, as he asserts, present fundamental problems with TSLRIC methods. If the prices for capital goods are expected to change, it is a mistake to require that straight-line depreciation be incorporated into the regulated output prices. Hausman correctly notes this. He is in error, however, when he claims that an expected decline in the price of capital goods would require that depreciation expense be higher in all years. For a given expected useful life, accelerating depreciation entails higher depreciation charges in the early years of an asset's life, but lower ones in the later years. If [*2*] falling prices for capital goods are incorporated into TSLRIC, the resulting price schedule will reflect higher depreciation expense in the early years, and result in higher user prices, and lower depreciation expense and user prices in the later years.[3] The asset lives

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[3] For a theoretical treatment of the necessity for accelerated (or front-loaded) depreciation when capital goods prices are declining, see Crew and Kleindorfer, "Economic Depreciation and the Regulated Firm under Competition and Technological Change." *Journal of Regulatory Economics*, vol. 4, March 1992.

themselves are subject to little dispute; there is evidence that the difference between regulators' and LECs' estimates of useful assets' life is quite small, and that most of the differences occur in subscriber metallic cable, not in other asset classes such as switches.[4]

We accept the proposition that if prices of capital goods are expected to decline, then accelerated depreciation is called for. However, there are several reasons to believe that the adjustments to TSLRIC costs, if any, will be small. First, Hausman provides no evidence that the prices of capital goods purchased by the ILECs are expected to decline in the future. His numerical examples apply recent switch price decreases to all telephone plant, even though he presents no evidence on past or expected future price trends for other capital goods. In addition, some knowledgeable observers predict that switch prices will decline very modestly over the next five years or so.[5] Second, any claims from the ILECs concerning future capital goods price declines should be consistent with those same ILECs' productivity projections for price caps.[6] Third, Hatfield's TSLRIC cost estimates are not particularly sensitive to changes in the cost of capital goods, so average costs over a multi-year period should not be very sensitive to shifts of

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[4] See Baseman & Van Gieson, "Depreciation Policy in the Telecommunications Industry: Implications for Cost Recovery by the Local Exchange Carriers." MICRA Research Report, December 1995.

[5] *The U.S. Central Office Equipment Market*, Northern Business Information, January 1996.

[6] It is not immediately obvious how USTA will reconcile Hausman's projection of enormous expected future price declines for all capital purchased by ILECs with USTA's recent positions in price cap proceedings that future productivity growth for the LECs will be very moderate.

depreciation expense across years.

Regulators may be inclined to revisit depreciation policy on "fairness" grounds. If switch price depreciation has been too low in the past, they may feel that some compensation is called for. If the Commission and state regulators decide to revisit depreciation policy, they should do a complete job, and not limit their inquiry to adjustments that provide a financial benefit to the LECs. Other aspects of depreciation deserve attention. In particular, conventional straight-line depreciation produced cross-subsidies from monopolized to competitive services. We have in [*3*] mind especially assets that were put in place ahead of expected use. We do not dispute that such investments may have been efficient. To the extent the equipment in telephony comes in lumpy increments, it is efficient to invest early, live with underutilization for a while and, in doing so, realize the benefits of scale economics (lay more cable than is presently needed while the ditch is open). But then to apply straight-line depreciation as soon as the asset is placed in use is not appropriate and results in prices that are inefficiently too high in the earliest years of the asset's life. Here the pattern of depreciation to be included in regulated product prices is one which starts low, then rises, and then falls, reflecting increasing use in the early years, and declining capital prices in the later years. To fail to have prices correctly reflect usage results in today's customers partially paying for capacity put in place to serve tomorrow's customers.

In the old regime of regulated local telephony, especially given the substantial overlap in the identity of today's and tomorrow's customers, these cross subsidies resulted in little distortion. However, the approach allows cross subsidies that are potentially distortionary in the new regime. It makes sense that the LECs will want to have capacity in place, and be ready

to serve the long-distance market as soon as they have the freedom to do so. However, the costs of that capacity should be paid for entirely from the LECs *future* long-distance revenues.[7] Current regulatory practice fails to require that separation. Indeed, since the switching and transport investments can also be used for local and intra-LATA services, current customers of those services are now paying the depreciation expenses for capacity put in place to serve the future long-distance market.[8] For (forward-looking) efficiency, the costs of such capacity should be excluded from the costs of unbundled elements for local service (as happens in Hatfield's TSLRIC study which sizes the network to provide only local, narrowband services). For (backward-looking) fairness, it is likely that local service customers are entitled to refunds to reverse their past contributions to this cross-subsidy.[9]

III. OPTION VALUES AND TSLRIC

Hausman's most intense criticism is directed at the DOJ and IXCs for their alleged failure [*4*]to understand the importance of option value in investment decisions. When

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[7] The same argument applies to other potential cross-subsidies, such building broadband plant before there are revenues from video or other broadband services, yet charging depreciation expense to the cost of basic local services.

[8] Selwyn and Kratvin have provided evidence suggesting that this cross-subsidy concern is a very real one. The LECs' rate of investment in new equipment has far outstripped the growth in demand for services they are now allowed to offer. See Lee Selwyn and Patricia Kratvin, *Analysis of Incumbent LEC Embedded Investment, Economics and Technology, Inc.*, filed with AT&T Reply Comments in CC Docket No. 96-98, May 30, 1996.

[9] Prices are not subsidy-free if a group of customers pay more for service than the TSLRIC of a network designed to serve only that group.

investments are irreversible (i.e., costs are sunk), the act of investing extinguishes the option of waiting and investing (or not) later. This option has value, and the return to investment should include the value of the now-foregone option to wait.[10] Hausman emphasizes that investment on the part of the ILECs, together with the new legislation, give the CLECs the *option*, but not the *obligation*, to use the investments the ILECs have made.[11] Hausman argues that the CLECs should be required to pay the ILEC a premium in excess of TSLRIC to compensate

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[10] For discussions of the "investments as options" literature, see Avinash Dixit and Robert Pindyck, *Investment Under Uncertainty*, Princeton University Press (1994) and R. Glenn Hubbard, "Investment Under Uncertainty; Keeping One's Options Open," *Journal of Economic Literature*, December 1994, pp. 1816-1831.

This literature emphasizes the role of one-way bets in some investment decisions. That is, in certain circumstances an investment's upside is more limited that its downside, and the investor rationally requires a premium to undertake the investment (and extinguish the option not to invest). The literature includes full models of the "monopoly" case, where only one firm has the option of making the investment, and the "competitive" case, where many firms can invest and each knows that if it does not invest, other firms may. The one-way bet in the monopoly case arises from waiting for better information while deferring the investment. If later information shows the investment to be a good one, it can still be made. So the costs of waiting are low. However, if the new information shows the investment to be a bad one, an expensive mistake has been avoided. In the competitive case, the asymmetry is said to arise because if uncertainty is resolved against the investment, the firms having made it suffer losses (since the investment is irreversible). If uncertainty is resolved in favor of an investment, incumbents expand and new entry occurs, which puts a limit on the profits to be realized.

This literature does not include complete models of oligopoly situations, where there may be advantages to moving first. Dixit and Pindyck recognize that such first-mover advantages might reverse the analysis, creating an advantage to investing early.

[11] Hausman, *op cit.*, p. 2.

the ILEC for bearing the risk associated with the new investment over its full economic life.

We agree that investment by the ILECs gives the CLECs options. But we would also argue that the ILECs have always given their customers exactly these options. The ILECs' traditional telephone customers made no long-term commitments to the ILECs. They have always had the option, but not the obligation, to have telephone service, and the right to disconnect their phones or reduce usage. Thus, if the prior TSLRIC calculations resulted in adequate capital recovery to ILEC investors, they need not be altered. Indeed, all business enterprises give their customers options. The local supermarket, for example, gives customers the option to buy all sorts of perishable food. Some of these options expire worthless; that is, they spoil or are discarded. Investments are made, not knowing whether or how much customers will buy. On average, returns to these investments cover costs, including the costs of options the customers do not exercise. Telephone services are not different.

[*5*] This perspective informs a deeper understanding of exactly what "option value" issues arise with the entry of the CLECs into local telephone service. If the choice is for the ILEC to lease capital to a CLEC or to use that capital to serve local customers directly, the only factor that could justify altering the TSLRIC price to the CLEC is its greater willingness to commit to a long-term contract. In this case, of course, the price should be adjusted *down*, not up, because any failure for the CLEC's customers to fully utilize the capacity that the CLEC has leased is the CLEC's problem, not the ILEC's. In other words, the CLEC has assumed the risk associated with the option from the ILEC and the ILEC now

need no longer charge for it.[12]

The situation in which a substantial *ex ante* adjustment to the TSLRIC prices for future investments[13] might be in order is limited to circumstances where, as a result of leasing equipment

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[12] A customer making a term commitment thus has earned a discount (below a Hatfield TSLRIC) because it is bearing risks that the ILEC was paid to bear in the circumstance where customers did not make term commitments.

It is easy to see why customer commitments shift risk from seller to buyer. Suppose in a world with no commitments, a local recession reduced demand by 10%. Then (with binding price caps), the ILEC's revenues fall 10%. However, if 20% of the customers' volume entailed term commitments, then in the same local recession, the ILEC loses 10% of revenues on the uncommitted volume, but suffers no losses on the committed volume, resulting in a revenue loss of less than 10%.

CLECs should also receive additional discounts if the capacity rights they commit to are less valuable than the capacity rights retained by the ILEC. An example is where the ILEC retains the right to use capacity committed to the CLEC in the event the CLEC is not using it, but the CLEC does not obtain a similar right to access unused ILEC capacity. To see how this could work, suppose a CLEC has rented rights to 20% of a switch's capacity. If the ILEC retains the right to use more than 80% of the switch's capacity in the event the CLEC is not using it, the ILEC has "use it or lose it" rights with respect to that capacity. If the CLEC does not have similar rights to unused ILEC capacity in the switch, then discounted terms should govern the price paid by the CLEC for capacity rights, since those rights are less valuable than the capacity rights retained by the ILEC. The ILEC benefits from asymmetric "use or lose" provisions because the capacity costs to serve its own demand fall. That is because, to the extent that the ILEC is able to sometimes serve its customers with capacity that others have paid for, the ILEC's ratio of own capacity to output is reduced.

[13] We wish to stress that here we are dealing with the criticisms Hausman levels against TSLRIC pricing principles for future investments. We are not addressing the stranded cost issues associated with the ILECs' embedded plant. We disagree with Hausman on that issue as well, but that is not the subject of this paper.

to the CLEC, the ILEC experiences a decline in capacity utilization that otherwise would not have occurred. For example, the classic complaint of the LECs is that it is the intent of the CLECs to lease equipment from them for a few years, steal their customers, and then build their own [*6*] equipment, leaving the LECs with unused, and presumably unpaid for, capacity.[14]

While we cannot rule out such a scenario, we believe it is reasonable to ask: Why would the CLECs ever build their own equipment if the ILECs could do it cheaper? Perhaps because the ILECs are not cooperating with them? Is it reasonable to allow the ILECs to charge the CLECs more to lease the ILECs' equipment because their own uncooperative behavior is going to drive the CLECs *to build their own equipment*? It seems that to allow this would only increase the likelihood of cooperation failure. By charging the CLECs higher prices to start, the ILECs give them further incentives to build their own equipment, which makes the ILECs all the more eager to collect whatever they can from the CLECs, while they can. "Solving" the possible problem of redundant capacity by raising the price on rented capacity would thus be truly perverse.

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[14] The potential problem of redundant capacity can be ameliorated by treating TSLRIC prices as a schedule of *maximum* prices. If an ILEC's short run incremental cost is less than TSLRIC (as may occur if the ILEC has excess capacity), then society, the ILEC and the CLECs are all better off with a uniform price for unbundled elements set below TSLRIC. Society, the ILEC and the CLECs share an interest in avoiding redundant capacity. At a price for unbundled elements less than TSLRIC, society benefits because redundant capacity is not built, the ILEC benefits because some margin over short run incremental cost is better than no revenues and stranded investment, and the CLECs benefit because (at least until the ILEC no longer has excess capacity), they receive prices below the costs (TSLRIC) at which they could build their own facilities.

There are more reasonable ways to address the issue. Under what conditions would an ILEC's TSLRIC costs associated with a current investment (the "facility") be increased as the result of input sales to competitors? The necessary conditions include

1) more customers end up being served in the future by facilities owned by someone else than if the input sales were not made,

2) the ILEC's future expected capacity utilization for the facility unavoidably falls as a result, and

3) the ILEC's average cost for the facility increases due to the fall in capacity utilization.

As long as the CLEC continues to use the ILEC's facilities, of course, any capture of customers by the CLEC or customer switching between the ILEC and the CLEC, will not affect the demand for, or capacity utilization of, the ILEC's facilities. Thus the first condition rules out any effects from resold local service, as well as any effect from the sale of unbundled elements so long as the ILEC's facilities are used.

With respect to the second condition, it might seem self-evident that the construction of facilities by a CLEC to serve its local customers would always reduce the rate of capacity utilization of the ILEC's facilities. But it is not so simple. In some plausible situations, the defection of ILEC customers in the future to the CLECs will increase the ILEC's capacity utilization (and reduce the ILEC's costs). The CLEC's decision to build its own capacity in the [*7*] future will reduce the need for the ILEC to build capacity. As a result, the ILEC's expectation of future lost sales to other CLECs reduces

its expected rate of growth. Since telecommunications capacity is often added in lumpy increments, capacity utilization over time can be a decreasing function of the rate of growth.[15] In that case, if the ILEC's growth rate slows (but does not turn negative), its average cost is in fact reduced by the future loss of sales to the CLECs. The ILEC can defer investment that, if made, would cause it to enter the high cost, high excess capacity portion of the capacity cycle.

The third condition is not met if the ILEC can quickly resize its facilities at low cost.[16] The second and third conditions jointly are not met if the contract provisions with the CLEC combine sufficient term length and/or termination notice to allow the ILEC to revise its facilities plan at low cost to take

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[15] Consider a simple example. Assume no scale economies. If capacity is most efficiently added in discrete increments then an ILEC facing zero demand growth achieves minimum cost *for it never has to carry the costs of excess capacity for future growth*. Similarly, an ILEC facing low demand growth can achieve lower costs than an ILEC facing high growth, for the low growth ILEC never has to carry much excess capacity, and can achieve costs almost as low as the zero growth company.

Now we are not suggesting that low growth ILECs will always have lower costs than high growth ILECs. There are cases where high growth generates lower costs. However, we are warning that the intuitive view that lower capacity utilization will always be the result of CLECs' expansion is not a valid generalization.

[16] It may well be that the physical elements of the ILEC's networks that the CLECs are most likely to replace with their own facilities (switches) are, because of modern modular designs, also the network components that are easiest for the ILEC's to reconfigure at low cost; while the network elements with the least short term cost flexibility for the ILEC's (distribution loop) are the elements where the CLECs are most likely to rely on the ILEC's facilities for a long time.

into account the changed requirements.[17] Indeed, when the ILEC's capital recovery would be too low at TSLRIC-based spot prices, the efficient answer is not only to raise the spot rental price and stop there. As already noted, this is sure-fire way to induce cooperation breakdown even when it is socially efficient for the ILEC to build the facility. Rather, term commitments and/or termination notice provisions are the efficient solution. And, also as already noted, customers making adequate commitments would pay less than TSLRIC because they are bearing risks for which the ILEC would otherwise be compensated in a [*8*] competitive context (via the risk-adjusted rate of return).[18] These topics are revisited in the final section of this paper.

With respect to the cost of capital issue, the realization that virtually all businesses give their customers options is especially helpful. In particular, it suggests that if businesses have successfully compensated investors in the past, we need

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[17] In a steadily growing market, such as local telephony, it is far easier to accommodate at low cost changes in future requirements based on the decisions of individual customers to take their business elsewhere. So long as the lost business is less than expected growth, the seller can simply forego investments in additional capacity it otherwise would have made.

[18] Consider a competitive market. When a customer's demand is large relative to the seller's capacity, the seller faces the need to build new capacity to meet the customer's requirements. If the investment is long-lived and irreversible, and the buyer does not agree to term commitments and/or adequate termination notice to allow the seller to adjust its facilities requirements, then the customer will pay a high price (above TSLRIC) or the seller will not build the facility. However, when the customer commits to an adequate contact length and/or offers adequate notice of termination, the price will be low (below TSLRIC) because the buyer is now bearing risks that a seller would ordinarily bear and receive compensation for in a risk-adjusted rate of return.

not now think that the cost of capital is higher than we previously believed. Indeed, work on the CAPM has long noted that firms in industries that involve large sunk costs and irreversible investments tend to have higher betas, and therefore higher costs of capital.[19]

Hausman, however, would have us believe that not only should an option value be incorporated into TSLRIC, but that a "TSLRIC calculation which ignores the sunk cost feature of telecommunications network investments would thus be off by a factor of two." Hausman's ruminations on this issue are particularly misleading. The flaws deserve some attention.

The "factor of two" claim is based on a numerical example that Hausman burrowed from Dixit and Pindyck. The numerical example was constructed to be extreme in order to demonstrate option value to students. The example is not relevant to the policy issues at hand. First, it was based on complete monopoly, where only one firm could make the investment decision, whereas the situation we address here is one in which numerous firms could make the investment. Second, the example involved only fixed costs, and no variable costs at all and, thus, overstates any option value. Third, the example involved arbitrarily chosen parameter values of no relevance to telephone companies or their regulators.

Hausman's claim that corporate hurdle rates generally include a substantial option premium is not correct.[20] Moreover, why he believes this apparently involves a shocking

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[19] See Brealey and Myers, *Principles of Corporate Finance*, McGraw-Hill (1988), pp. 190-1.

[20] See Hausman, *op cit.* at p. 7.

error on his part. His claim comes from a study by Summers, who surveyed CFOs of large U.S. corporations and asked them to report the after-tax *nominal* hurdle rates they used in investment [*9*]decisions.[21] They reported a mean rate of 17%, with a modal rate of 15%. Hausman claims that these rates far exceed the cost of capital.

But they do not. The CAPM cost of capital for a company of average risk (beta equals one) is just the risk-free rate plus the equity premium. The *real* riskless rate has averaged 1.0% over the last sixty years. The equity risk premium for large companies such as those surveyed by Summers has averaged 7.4%, for a total average real return of 8.4%.[22] To compare these *real* (net of inflation) figures to Summers' *nominal* (gross of inflation) ones, we must subtract expected inflation from the nominal rates. To estimate expected inflation, we look to the ten-year government bond rate at the time of the study (1985), which was 10.62%.[23] The average real return on such bonds has been about 2%, which implies expected inflation of 8.6%.[24] Subtracting 8.6% from Summers' mean nominal hurdle rate of 17% gives a real hurdle rate of 8.4%, *identical to the CAPM cost of capital.* There is no mystery to be explained by an options premium. The only mystery is how Hausman confused

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[21] See Lawrence Summers, "Investment Incentives and the Discounting of Depreciation Allowances," in *The Effects of Taxation on Capital Accumulation*, Martin Feldstein, Ed. (Chicago), University of Chicago Press, 1987.

[22] See Ibbotson Associates, *Stocks Bonds Bills and Inflation*, 1995 Yearbook, Table B-1 at p. 157.

[23] *Economic Report of the President*, 1993. Table B-69 at p. 248.

[24] Ibbotson Associates, *Ibid.*, Table 6-6 at p. 118.

nominal and real rates of return.[25]

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IV. MORE ON ONE-WAY BETS

Hausman asserts that proponents of TSLRIC are trying to impose an unfair, one-way bet on the ILECs. He argues (p. 2) that the ILECs are compelled to invest using today's technology, yet the CLECs can wait without risk, buy unbundled elements at TSLRIC from ILEC and, if quality-adjusted equipment prices fall, the CLECs can invest in the future using the newer, cheaper technology, or simply

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[25] The options literature is fairly new, and there does not yet appear to be any consensus on its significance for estimating firms' costs of capital. The literature, however, does include an empirical attempt by Pindyck and another co-author to estimate the increase in the cost of capital (or the capital recovery factor) necessitated *in the multi-firm context*, by the options value created by irreversibility and uncertainty. In U.S. industries generally, Caballero and Pindyck "find that a doubling of industry-wide uncertainty raises the required rate of return on new capital by about 20 percent." (See Caballero and Pindyck, "Uncertainty, Investment, and Industry Evolution," Discussion Paper, MIT and NBER, September 1995.) It is not clear the extent to which these results are inconsistent with conventional CAPM estimated costs of capital for their sample. However, because betas are sensitive to sunk costs, we would expect CAPM costs of capital estimated on the same sample to show a similar pattern.

Another paper finds that price uncertainty does not affect investment in any but the most unconcentrated market. When the four-firm concentration ratio exceeds 20%, the effect of price uncertainty is "always small and not significantly different from zero." The authors' conjecture that, as Dixit and Pindyck argue, the option value to waiting is important in structurally competitive industries, but due to strategic issues and first-mover advantages, the theory does not hold up in even modestly concentrated industries. See Ghosal and Loungani, "Product Market Competition and the Impact of Price Uncertainty on Investment: some Evidence from US Manufacturing Industries," *The Journal of Industrial Economics*, June 1996, pp. 217-228.

request reductions in element prices based on the new, lower TSLRICs. But Hausman merely asserts, and does not demonstrate, that this is a one-way bet. If equipment prices rise, or if costs of installing loops increase, then TSLRIC will increase, and under TSLRIC pricing, the ILECs are allowed to increase their prices for unbundled elements whenever the pricing of the elements is revisited.[26] This will provide the ILECs with an unanticipated profit, since they invested before the increases in unbundled element prices were known. In order to make the investment a fair bet for the ILECs, expected changes in the future cost of the elements should be taken into account in setting TSLRIC prices. But assuming that has been done, TSLRIC does not force a one-way bet on the ILECs, and there is no reason for an option premium.

Hausman also alleges that TSLRIC studies expose the ILECs to uncertainty over demand, but do not compensate the ILECs for assuming this risk. This allegation reflects a misunderstanding of Hatfield's TSLRIC methodology. The Hatfield model estimates an annual TSLRIC cost for the local carrier. The plant is sized to service current demands, with initial fill rates set to accommodate future growth. Thus, for a particular piece of the network, Hatfield may assume a 60% fill rate, whereas additional investment is not needed until the fill rate reaches (say) 85%. In that case, Hatfield's TSLRIC price (for the first and all subsequent periods!) is based on a 60% fill rate. In fact, with demand growth, the asset will realize higher average fill and, therefore, lower average unit costs over its lifetime. In short, with respect to demand uncertainty, Hatfield's TSLRIC methodology entails a one-way bet favoring

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[26] MCI has proposed that the initial unbundled element prices remain in effect for three to five years. See *Comments of MCI Corporation*, CC Docket No. 96-98, May 16, 1996 at p. 68.

the ILEC. The ILEC captures the cost savings from increased utilization in future periods, but does not share those savings in reduced TSLRIC prices. The ILECs' only offsetting risk is that demand for use of its local telephone facilities may actually fall; (i.e., market demand growth will be less than the loss of sales to facilities-based local competitors.) This risk seems very low given the rapid growth in demand for local service, which flows from population growth, increased long distance traffic, and the increase in multiple lines to accommodate increasing use of Internet and on-line services.
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V. CONCLUDING COMMENTS

We have demonstrated that Hausman's depreciation and option value arguments contribute little to our understanding of appropriate policy in the telecommunications arena.

With respect to depreciation of capital goods, it is clear that if capital good prices are expected to fall, accelerated depreciation is in order. Accelerated depreciation by itself does not change the useful life of equipment and, thus, depreciation will not be higher in all years, as Hausman erroneously claims, but only in the earlier years. Although it is an empirical question the magnitude of any such changes to TSLRIC pricing will likely be small.

The option valuation arguments are more subtle. We agree options are important. But we also realize that producers investing in long-lived capital have always given their customers particularly valuable options, and do not regard the new situation as substantially different. Nor do we regard it appropriate for the ILECs to be able to charge their CLEC customers for anticipated cooperation breakdown, when the party whose cooperation is most needed is that of the ILEC

itself.

With respect to the cost of capital, we find no evidence that the CAPM has failed to properly compensate investors for option values. It is rather like the Bourgeois Gentilhomme who discovers that be has been speaking prose *all of his life*. So has the CAPM been adjusting the cost of capital to compensate investors for options given to customers. Hausman provides no empirical evidence that the "options" view of investment should change our views on the cost of capital (as opposed to improving our understanding of why the cost of capital is higher for some firms that for others), and we demonstrated that his main piece of evidence for high option values (his interpretation of Summer's research) reflected a surprising confusion over real versus nominal rates of return. Adjustments to the cost of capital are in order in only two circumstances. First, if the CLEC is willing to commit for services on more than a spot market basis, that is, to buy the option from the ILEC and give it to customers itself, price should be lower, reflecting that the ILEC no longer bears this risk. Second, if doing business with the CLEC is likely to result in lower capacity utilization for the ILEC, then price should be adjusted up. But in this case, we must ask why capacity utilization will be affected and be certain that the appropriate price or other contractual adjustment does not worsen incentives to cooperate.

We have demonstrated that Hausman provides no empirical or theoretical basis for his proposed massive increases in capital recovery for TSLRIC prices. Nonetheless, the costs of network elements will be at least partially sunk, and we do not argue that this fact should be ignored. In any event, a modest increase in LEC hurdle rates above the pre-1996 cost of capital may be warranted simply on traditional CAPM

grounds: a move from a sheltered monopoly environment to a more competitive environment exposes the shareholders of the firm to increased nondiversifiable risk. Risks that used to be borne by ratepayers are now (or should be) borne by shareholders. In that regard, it is worth noting that the costs of capital in the Hatfield model are in fact considerably higher than the costs of capital LEC's have been allowed to earn historically. [*12*] That is because LEC allowed rates of return are *nominal* rates of return (typically in the 9-11% range[27]), whereas Hatfield's cost of capital (around 10% with variations across LECs) is a *real* cost of capital,[28] and is therefore equivalent to a 13-14% *nominal* cost of capital. Thus, Hatfield's cost of capital is already 30-50% higher than rates of return typically allowed by state regulators.

Building an option value into the capital recovery factor implies that the seller (the ILEC), bears all the risk and is compensated with a higher monthly rental price for its facilities.[29] At the other extreme, the buyer could commit to pay for the capacity whether he uses it or not. In that case the

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[27] See *Utility Regulatory Policy in the United States and Canada*, 1993-94 Compilation, National Association of Regulatory Utility Commissioners, Table 120 at p. 292.

[28] Hatfield's model selects a uniform, multiperiod price, with no adjustments for either changes in the purchasing power of money (general inflation would reduced the value of future revenues) or for changes in future variable input prices.

[29] If market prices are constrained to the level of the marginal costs of new entrants who obtain elements at TSLRIC-based prices from the ILEC, then it is very important not to overestimate those TSLRIC-based costs. If the ILEC has a 90% market share, and the entrants have a 10% share, a small overcharge in TSLRIC prices to the entrant results in overcharges to the entire market, and not just to the 10% of the market served by entrants.

seller deserves no option premium (indeed, customers making commitments are entitled to discounts relative to customers who do not commit) because the buyer is bearing the entire cost of uncertainty. Real-world competitive markets exhibit a wide variety of risk sharing via contract between these two extremes. The appropriate degree of risk sharing need not ordinarily be imposed by an outsider in the ordinary commercial context, where the buyer and seller have a joint interest in consummating the transaction. Reliance on purely private agreement is not likely to work here, however, because the ILEC has no incentive to reach agreement. Thus, while it is not unreasonable that customers bear some of the risks associated with long-lived investment provide unbundled elements, left to their own devices the LECs' optimal strategy is to hold out for contract terms so onerous that the demand for unbundled elements is kept to the minimum necessary for the LEC to be allowed to enter long distance service. The solution, perhaps, is to examine otherwise similar situations where the LEC had an ordinary commercial motivation to reach an agreement with a customer, and pattern up-front payments, contract lengths and cancellation penalties for the CLECs on the terms and penalties in similar contracts.[30] For [*13*]example, the offering of

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[30] Another possibility is to require the CLEC to sign a long term lease covering the useful lives of the assets it wants to rent. They could resell those rights later, but they, not the ILEC would then suffer any resale loss. The problem is that the market for resold capacity may be a very thin one, and one where the ILEC possesses monopsony power. It seems likely that the ILEC will often have the highest value on facilities abandoned by a CLEC whose entry attempt failed, since the ILEC will have a network covering the entire region, whereas other CLECs, if there are any, may have networks located or designed in such a way that the abandoned capacity is of low value to them. In that case, the ILEC will win the bidding for the capacity at prices below the value of the capacity to the ILEC. It is by now well accepted that exit barriers are entry barriers. Here, the exit barrier is the likelihood that a CLEC will not receive fair market value for its

CENTREX entailed major facilities investments by the LECs in switching, transport, and loop capacity (i.e., facilities of the type the CLECs will need). The LECs invested in these facilities in advance of contracts with customers, so that they could market CENTREX as a service available to new customers on short notice. Similarly, CENTREX customers could decide later, after the facilities are in place, that they want to convert to PBXs, much as IXCs may decide later to build their own facilities and no longer use the capacity they had rented from the LEC. Thus the required up-front payments, contract duration, cancellation penalties and other terms in CENTREX contracts would appear to be useful benchmarks for reasonable terms and conditions associated with the ILECs' provision of facilities to the CLECs.[31]

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abandoned investment. As a result, the prospects for socially beneficial entry will be reduced if CLECs had to commit to rent services over an asset's entire useful life.

[31] If in fact other ratepayers have been protected from cross-subsidy by the terms and conditions of CENTREX contracts, then the ILECs cannot credibly claim that they need greater term commitments than those found in the CENTREX contracts when they sell unbundled elements to CLECs. Nor can they credibly claim that capital recovery factors need to be doubled or trebled (a la Hausman) over the LECs' historic levels before the sale of unbundled elements to the CLECs will be compensatory. Clearly CENTREX investment was sunk, and the LECs faced uncertainty about future demand and technology, so that if it was not appropriate to include an extraordinarily high option value in CENTREX rates, it is also not appropriate to do so now for unbundled elements sold to the CLECs.

has a broad background in several industries, including telecommunications, broadcast and cable television, and electric utilities.

Mr. Baseman has submitted written testimony on numerous occasions to regulatory authorities on issues such as the costs and benefits of line-of-business restrictions for profit-regulated monopolists; the effects of alternatives to traditional rate-of-return regulation; the effects on consumers of cable deregulation; economic and competitive issues relevant to expanded interconnection by local telephone companies with emerging sources of competition; and the implications for the exercise of market power of abandonment proposals for natural gas pipelines at the FERC. He has considerable experience, from various antitrust matters, with the competitive and efficiency aspects of joint venture operations and long-term contracts.

Mr. Baseman received his graduate training in economics at Stanford University, where he received an MA. His publications include articles in the economics of open entry and competitive in natural monopoly contexts.

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From 1983 to 1989, Dr. Warren-Boulton served as the chief economist for the Antitrust Division of the U.S. Department of Justice, first as Director of its Economic Policy Office and then as the first Deputy Assistant Attorney General for Economic Analysis. Dr. Warren-Boulton contributed to the economic analysis of general policy issues, as reflected in the 1984 Merger Guidelines, the *Vertical Restraint Guidelines* and the antitrust provisions of the

Sentencing Guidelines, as well as legislative initiatives on issues such as resale price maintenance, revisions of the antitrust statutes and deregulation of oil pipelines.

Dr. Warren-Boulton has held faculty positions in economics or psychology at Washington University, Princeton and The American University. He holds a B.A. from Yale University and M.P.A., M.A. and Ph.D. degrees from Princeton University.

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Prior to her government service, Dr. Woodward held faculty positions at UCLA, UC Santa Barbara, and the University of Rochester, where she taught corporate finance, investments, and price theory. She has served as an expert on numerous securities fraud and related matters, and testified in tax court for the Internal Revenue Service. She holds a BA and a PhD from UCLA. She has written and published on a variety of topics in financial economics.

FROM *IN RE IMPLEMENTATION OF THE LOCAL COMPETITION PROVISIONS IN THE TELECOMMUNICATIONS ACT OF 1996*, FIRST REPORT AND ORDER, CC DOCKET NO. 96-98 (AUG. 8, 1996):

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I. INTRODUCTION, OVERVIEW, AND EXECUTIVE SUMMARY

A. The Telecommunications Act of 1996 - A New Direction

1. The Telecommunications Act of 1996[1] fundamentally changes telecommunications regulation. In the old regulatory regime government encouraged monopolies. In the new regulatory regime, we and the states remove the outdated barriers that protect monopolies from competition and affirmatively promote efficient competition using tools forged by Congress. Historically, regulation of this industry has been premised on the belief that service could be provided at the lowest cost to the maximum number of consumers through a regulated monopoly network. State and federal regulators devoted their efforts over many decades to regulating the prices and practices of these monopolies and protecting them against competitive entry. The 1996 Act adopts precisely the opposite approach. Rather than shielding telephone companies from competition, the 1996 Act requires telephone companies to open their networks to competition.

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[1] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56, *to be codified at* 47 U.S.C. §§ 151 *et. seq*. Hereinafter, all citations to the 1996 Act will be to the 1996 Act as codified in the United States Code.

2. The 1996 Act also recasts the relationship between the FCC and state commissions responsible for regulating telecommunications services. Until now, we and our state counterparts generally have regulated the jurisdictional segments of this industry assigned to each of us by the Communications Act of 1934. The 1996 Act forges a new partnership between state and federal regulators. This arrangement is far better suited to the coming world of competition in which historical regulatory distinctions are supplanted by competitive forces. As this Order demonstrates, we have benefitted enormously from the expertise and experience that the state commissioners and their staffs have contributed to these discussions. We look forward to the continuation of that cooperative working relationship in the coming months as each of us carries out the role assigned by the 1996 Act.

3. Three principal goals established by the telephony provisions of the 1996 Act are: (1) opening the local exchange and exchange access markets to competitive entry; (2) promoting increased competition in telecommunications markets that are already open to competition, including the long distance services market; and (3) reforming our system of universal service so that universal service is preserved and advanced as the local exchange and exchange access markets move from monopoly to competition. In this rulemaking and related proceedings, we are taking the steps that will achieve the pro- competitive, deregulatory goals of the 1996 Act. The Act directs us and our state colleagues to remove not only statutory and regulatory impediments to competition, but economic and operational impediments as well. We are directed to remove these impediments to competition in ali telecommunications markets, while also preserving and advancing universal service in a manner fully consistent with competition.

4. These three goals are integrally related. Indeed, the relationship between fostering competition in local telecommunications markets and promoting greater competition in the long distance market is fundamental to the 1996 Act. Competition in local exchange and exchange access markets is desirable, not only because of the social and economic benefits competition will bring to consumers of *local* services, but also because competition eventually will eliminate the ability of an incumbent local exchange carrier to use its control of bottleneck local facilities to impede free market competition. Under section 251, incumbent local exchange carriers (LECs), including the Bell Operating Companies (BOCs), are mandated to take several steps to open their networks to competition, including providing interconnection, offering access to unbundled elements of their networks, and making their retail services available at wholesale rates so that they can be resold. Under section 271, once the BOCs have taken the necessary steps, they are allowed to offer long distance service in areas where they provide local telephone service, if we find that entry meets the specific statutory requirements and is consistent with the public interest. Thus, under the 1996 Act, the opening of one of the last monopoly bottleneck strongholds in telecommunications -- the local exchange and exchange access markets -- to competition is intended to pave the way for enhanced competition in *all* telecommunications markets, by allowing all providers to enter all markets. The opening of all telecommunications markets to all providers will blur traditional industry distinctions and bring new packages of services, lower prices and increased innovation to American consumers. The world envisioned by the 1996 Act is one in which all providers will have new competitive opportunities as well as new competitive challenges.

5. The Act also recognizes, however, that universal service cannot be maintained without reform of the current subsidy

system. The current universal service system is a patchwork quilt of implicit and explicit subsidies. These subsidies are intended to promote telephone subscribership, yet they do so at the expense of deterring or distorting competition. Some policies that traditionally have been justified on universal service considerations place competitors at a disadvantage. Other universal service policies place the incumbent LECs at a competitive disadvantage. For example, LECs are required to charge interexchange carriers a Carrier Common Line charge for every minute of interstate traffic that any of their customers send or receive. This exposes LECs to competition from competitive access providers, which are not subject to this cost burden. Hence, section 254 of the Act requires the Commission, working with the states and consumer advocates through a Federal/State Joint Board, to revamp the methods by which universal service payments are collected and disbursed.[2] The present universal service system is incompatible with the statutory mandate to introduce efficient competition into local markets, because the current system distorts competition in those markets. For example, without universal service reform, facilities-based entrants would be forced to compete against monopoly providers that enjoy not only the technical, economic, and marketing advantages of incumbency, but also subsidies that are provided only to the incumbents.

B. The Competition Trilogy: Section 251, Universal Service Reform and Access Charge Reform

6. The rules that we adopt to implement the local competition provisions of the 1996 Act represent only one part of a trilogy.

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[2] *Federal-State Joint Board on Universal Service*, CC Docket No. 96-45, Notice of Proposed Rulemaking *and Order Establishing Joint Board*, FCC 96-93 (rel. Mar. 8, 1996) (*Universal Service NPRM*).

In this Report and Order, we adopt initial rules designed to accomplish the first of the goals outlined above -- opening the local exchange and exchange access markets to competition. The steps we take today are the initial measures that will enable the states and the Commission to begin to implement sections 251 and 252. Given the dynamic nature of telecommunications technology and markets, it will be necessary over time to review proactively and adjust these rules to ensure both that the statute's mandate of competition is effectuated and enforced, and that regulatory burdens are lifted as soon as competition eliminates the need for them. Efforts to review and revise these rules will be guided by the experience of states in their initial implementation efforts.

7. The second part of the trilogy is universal service reform. In early November, the Federal/State Universal Service Joint Board, including three members of this Commission, will make its recommendations to the Commission. These recommendations will serve as the cornerstone of universal service reform. The Commission will act on the Joint Board's recommendations and adopt universal service rules not later than May 8, 1997, and, we hope, even earlier. Our universal service reform order, consistent with section 254, will rework the subsidy system to guarantee affordable service to all Americans in an era in which competition will be the driving force in telecommunications. By reforming the collection and distribution of universal service funds, the states and the Commission will also ensure that the goals of affordable service and access to advanced services are met by means that enhance, rather than distort, competition. Universal service reform is vitally connected to the local competition rules we adopt today.

8. The third part of the trilogy is access charge reform. It is widely recognized that, because a competitive market drives prices to cost, a system of charges which includes non-cost based components is inherently unstable and unsustainable. It

also well-recognized that access charge reform is intensely interrelated with the local competition rules of section 251 and the reform of universal service. We will complete access reform before or concurrently with a final order on universal service.

9. Only when all parts of the trilogy are complete will the task of adjusting the regulatory framework to fully competitive markets be finished. Only when our counterparts at the state level complete implementing and supplementing these rules will the complete blueprint for competition be in place. Completion of the trilogy, coupled with the reduction in burdensome and inefficient regulation we have undertaken pursuant to other provisions of the 1996 Act, will unleash marketplace forces that will fuel economic growth. Until then, incumbents and new entrants must undergo a transition process toward fully competitive markets. We will, however, act quickly to complete the three essential rulemakings. We intend to issue a notice of proposed rulemaking in 1996 and to complete the access charge reform proceeding concurrently with the statutory deadline established for the section 254 rulemaking. This timetable will ensure that actions taken by the Joint Board in November and this Commission by not later than May1997 in the universal service reform proceeding will be coordinated with the access reform docket.

C. Economic Barriers

10. As we pointed out in our Notice of Proposed Rulemaking in this docket,[3] the removal of statutory and

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[3] *Implementation of the Local Competition Provisions of the Telecommunications Act of 1996*, CC Docket No. 96-98, Notice of Proposed Rulemaking, FCC 96-182 (rel. Apr. 19, 1996), 61 Fed. Reg.

(continued...)

regulatory barriers to entry into the local exchange and exchange access markets, while a necessary precondition to competition, is not sufficient to ensure that competition will supplant monopolies. An incumbent LEC's existing infrastructure enables it to serve new customers at a much lower incremental cost than a facilities-based entrant that must install its own switches, trunking and loops to serve its customers.[4] Furthermore, absent interconnection between the incumbent LEC and the entrant, the customer of the entrant would be unable to complete calls to subscribers served by the incumbent LEC's network. Because an incumbent LEC currently serves virtually all subscribers in its local serving area,[5] an incumbent LEC has little economic incentive to assist new entrants in their efforts to secure a greater share of that market. An incumbent LEC also has the ability to act on its incentive to discourage entry and robust competition by not interconnecting its network with the new entrant's network or by insisting on supracompetitive prices or other unreasonable conditions for terminating calls from the entrant's customers to the incumbent LEC's subscribers.

11. Congress addressed these problems in the 1996 Act by mandating that the most significant economic impediments to efficient entry into the monopolized local market must be removed. The incumbent LECs have economies of density, connectivity, and scale; traditionally, these have been viewed as creating a natural monopoly. As we pointed out in our NPRM, the local competition provisions of the Act require that these

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[3] (...continued)
18311 (Apr. 25, 1996) (NPRM).

[4] *See* NPRM at para. 6.

[5] *See* NPRM at n.13.

economies be shared with entrants. We believe they should be shared in a way that permits the incumbent LECs to maintain operating efficiency to further fair competition, and to enable the entrants to share the economic benefits of that efficiency in the form of cost- based prices.[6] Congress also recognized that the transition to competition presents special considerations in markets served by smaller telephone companies, especially in rural areas.[7] We are mindful of these considerations, and know that they will be taken into account by state commissions as well.

12. The Act contemplates three paths of entry into the local market -- the construction of new networks, the use of unbundled elements of the incumbent's network, and resale. The 1996 Act requires us to implement rules that eliminate statutory and regulatory barriers and remove economic impediments to each. We anticipate that some new entrants will follow multiple paths of entry as market conditions and access to capital permit. Some may enter by relying at first entirely on resale of the incumbent's services and then gradually deploying their own facilities. This strategy was employed successfully by MCI and Sprint in the interexchange market during the 1970's and 1980's. Others may use a combination of entry strategies simultaneously -- whether in the same geographic market or in different ones. Some competitors may use unbundled network elements in combination with their own facilities to serve densely populated sections of an incumbent LEC's service territory, while using resold services to reach customers in less densely populated areas. Still other new entrants may pursue a sir gle entry strategy that does not vary by geographic region or over time. Section 251 neither explicitly

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[6] *See* NPRM at paras. 10-12.

[7] 47 U.S.C. § 251(f).

nor implicitly expresses a preference for one particular entry strategy. Moreover, given the likelihood that entrants will combine or alter entry strategies over time, an attempt to indicate such a preference in our section 251 rules may have unintended and undesirable results. Rather, our obligation in this proceeding is to establish rules that will ensure that all pro-competitive entry strategies may be explored. As to success or failure, we look to the market, not to regulation, for the answer.

13. We note that an entrant, such as a cable company, that constructs its own network will not necessarily need the services or facilities of an incumbent LEC to enable its own subscribers to communicate with each other. A firm adopting this entry strategy, however, still will need an agreement with the incumbent LEC to enable the entrant's customers to place calls to and receive calls from the incumbent LEC's subscribers.[8] Sections 251(b)(5) and (c)(2) require incumbent LECs to enter into such agreements on just, reasonable, and nondiscriminatory terms and to transport and terminate traffic originating on another carrier's network under reciprocal compensation arrangements. In this item, we adopt rules for states to apply in implementing these mandates of section 251 in their arbitration of interconnection disputes, as well as their review of such arbitrated arrangements, or a BOC's statement of generally available terms. We believe that our rules will assist the states in carrying out their responsibilities under the 1996 Act, thereby furthering the Act's goals of fostering prompt, efficient, competitive entry.

14. We also note that many new entrants will not have fully constructed their local networks when they begin to offer

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[8] *See infra*, Section IV.A.

service.[9] Although they may provide some of their own facilities, these new entrants will be unable to reach all of their customers without depending on the incumbent's facilities. Hence, in addition to an arrangement for terminating traffic on the incumbent LEC's network, entrants will likely need agreements that enable them to obtain wholesale prices for services they wish to sell at retail and to use at least some portions of the incumbents' facilities, such as local loops and end office switching facilities.

15. Congress recognized that, because of the incumbent LEC's incentives and superior bargaining power, its negotiations with new entrants over the terms of such agreements would be quite different from typical commercial negotiations. As distinct from bilateral commercial negotiation, the new entrant comes to the table with little or nothing the incumbent LEC needs or wants. The statute addresses this problem by creating an arbitration proceeding in which the new entrant may assert certain rights, including that the incumbent's prices for unbundled network elements must be "just, reasonable and nondiscriminatory."[10] We adopt rules herein to implement these requirements of section 251(c)(3).

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29. The 1996 Act requires the states to set prices for interconnection and unbundled elements that are cost-based, nondiscriminatory, and may include a reasonable profit. To

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[9] Joint Managers' Statement, S. Conf. Rep. No. 104-230, 104th Cong., 2d Sess. 113 (1996) ("Joint Explanatory Statement") at 121.

[10] *See* 47 U.S.C.§ 251(c)(3)

help the states accomplish this, the Commission concludes that the state commissions should set arbitrated rates for interconnection and access to unbundled elements pursuant a forward-looking economic cost pricing methodology. The Commission concludes that the prices that new entrants pay for interconnection and unbundled elements should be based on the local telephone companies Total Service Long Run Incremental Cost of a particular network element, which the Commission calls "Total Element Long-Run Incremental Cost" (TELRIC), plus a reasonable share of forward-looking joint and common costs. States will determine, among other things, the appropriate risk-adjusted cost of capital and depreciation rates. For states that are unable to conduct a cost study and apply an economic costing methodology within the statutory time frame for arbitrating interconnection disputes, the Commission establishes default ceilings and ranges for the states to apply, on an interim basis, to interconnection arrangements. The Commission establishes a default range of 0.2-0.4 cents per minute for switching. For tandem switching, the Commission establishes a default ceiling of 0.15 cents per minute. The Order also establishes default ceilings for the other unbundled network elements.

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86. The only other possible interpretations would be that: (1) sections 251 and 252 address only interstate aspects of interconnection, services, and access to unbundled elements; (2) the provisions address only the intrastate aspects of those issues; or (3) the FCC's role is to establish rules for interstate aspects, and the states' role is to arbitrate and approve agreements on intrastate aspects. As explained below, none of

these interpretations withstands examination. Accordingly, we conclude that sections 251 and 252 address both interstate and intrastate aspects of interconnection services and access to unbundled elements.

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123. The majority of commenters agree that the Commission's section 208 complaint authority extends to the acts or omissions of common carriers in contravention of sections 251 and 252.[225] TCI further asserts that the Commission retains authority to issue declaratory rulings pursuant to the Administrative Procedure Act, 5 U.S.C. 554(e), and to initiate investigations pursuant to section 403 of the Communications Act.[226] Several state commissions argue, however, that allowing parties to file section 208 complaints would be inconsistent with the states' preeminent role under sections 251 and 252, at least in some circumstances. For example, the New York Commission contends that, to the extent that sections 251 and 252 apply to both interstate and intrastate services, the FCC only has authority to hear

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[225] *See, e.g.*, ALTS comments at 7; AT&T comments at 10-11; BellSouth comments at 9; CompTel comments at 103; Florida Commission comments at 10-11; Ind. Cable & Telecomm. Ass'n reply at 4; Jones Intercable comments at 13-14; MCI comments at 7-8; MFS comments at 8-9; Ohio Commission comments at 17; Sprint comments at 8-9; TCI comments at 10; TCC comments at 62.

[226] TCI comments at 10.

complaints regarding interstate communications.[227] The Illinois Commission asserts that a section 208 remedy would be appropriate only after an agreement is implemented, and only to the extent the complaint does not allege that the agreement violates standards set forth in sections 251 and 252.[228]

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176. We conclude that the term "interconnection" under section 251(c)(2) refers only to the physical linking of two networks for the mutual exchange of traffic. Including the transport and termination of traffic within the meaning of section 251(c)(2) would result in reading out of the statute the duty of all LECs to establish "reciprocal compensation arrangements for the transport and termination of telecommunications," under section 251(b)(5).[348] In addition, in setting the pricing standard for section 251(c)(2) interconnection, section 252(d)(1) states it applies when state commissions make determinations "of the just and reasonable rate for interconnection of *facilities and equipment* for purposes of subsection (c)(2) of section 251."[349] Because section 251(d)(1) states that it only applies to the interconnection of "facilities and equipment," if we were to interpret section

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[227] New York Commission reply; *see also* Wyoming Commission comments at 15- 16.

[228] Illinois Commission comments at 16-18.

[348] 47 U.S.C. § 251(b)(5).

[349] 47 U.S.C. § 251(d)(1) (emphasis added).

251(c)(2) to refer to transport and termination of traffic as well as the physical linking of equipment and facilities, it would still be necessary to find a pricing standard for the transport and termination of traffic apart from section 252(d)(1). We also reject CompTel's argument that reading section 251(c)(2) to refer only to the physical linking of networks implies that incumbent LECs would not have a duty to route and terminate traffic. That duty applies to all LECs and is clearly expressed in section 251(b)(5). We note that because interconnection refers to the physical linking of two networks, and not the transport and termination of traffic, access charges are not affected by our rules implementing section 251(c)(2).

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217. Section 202(a) of the Act states that "[i]t shall be unlawful for any common carrier to make any unjust or unreasonable discrimination in charges, practices, ... facilities, or services for or in connection with like communication service ... by any means or device, or to make or give any undue or unreasonable preference or advantage to any particular person."[460] By comparison, section 251(c)(2) creates a duty for incumbent LECs "to provide ... any requesting telecommunications carrier, interconnection with a LEC's network on rates, terms, and conditions that are just, reasonable, and nondiscriminatory."[461] The nondiscrimination requirement in section 251(c)(2) is not qualified by the "unjust or unreasonable" language of section 202(a). We therefore

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[460] 47 U.S.C. § 202(a).

[461] 47 U.S.C. § 251(c)(2)(D).

conclude that Congress did not intend that the term "nondiscriminatory" in the 1996 Act be synonymous with "unjust and unreasonable discrimination" used in the 1934 Act, but rather, intended a more stringent standard.

218. Given that the incumbent LEC will be providing interconnection to its competitors pursuant to the purpose of the 1996 Act, the LEC has the incentive to discriminate against its competitors by providing them less favorable terms and conditions of interconnection than it provides itself. Permitting such circumstances is inconsistent with the procompetitive purpose of the Act. Therefore, we reject for purposes of section 251, our historical interpretation of "nondiscriminatory," which we interpreted to mean a comparison between what the incumbent LEC provided other parties in a regulated monopoly environment. We believe that the term "nondiscriminatory," as used throughout section 251, applies to the terms and conditions an incumbent LEC imposes on third parties as well as on itself. In any event, by providing interconnection to a competitor in a manner less efficient than an incumbent LEC provides itself, the incumbent LEC violates the duty to be "just" and "reasonable" under section 251(c)(2)(D). Also, incumbent LECs may not discriminate against parties based upon the identity of the carrier (*i.e.*, whether the carrier is a CMRS provider, a CAP, or a competitive LEC). As long as a carrier meets the statutory requirements, as discussed in this section, it has a right to obtain interconnection with the incumbent LEC pursuant to section 251(c)(2).

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258. We adopt the concept of unbundled elements as physical facilities of the network, together with the features,

functions, and capabilities associated with those facilities. Carriers requesting access to unbundled elements within the incumbent LEC's network seek in effect to purchase the right to obtain exclusive access to an entire element, or some feature, function or capability of that element. For some elements, especially the loop, the requesting carrier will purchase exclusive access to the element for a specific period, such as on a monthly basis. Carriers seeking other elements, especially shared facilities such as common transport, are essentially purchasing access to a functionality of the incumbent's facilities on a minute-by-minute basis. This concept of network elements, as discussed *infra* at section V.G., does not alter the incumbent LEC's physical control or ability or duty to repair and maintain network elements.

259. We conclude that we should identify a particular facility or capability, for example, as a single network element, but allow ourselves and the states (where appropriate) the discretion to further identify, within that single facility or capability, additional required network elements. Thus, for example, in this proceeding, we identify the local loop as a single network element.[553] We also ask the states to evaluate, on a case-by-case basis, whether to require access to subloop elements, which can be facilities or capabilities within the local loop.[554] We agree with those commenters that argue that identifying a particular facility or capability as single network element, but allowing such elements to be further subdivided into additional elements, will allow our rules (as well as the states) to accommodate changes in technology, and thus better serve the interests of new entrants and incumbent LECs, and the procompetitive purposes

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[553] *See infra*, Section V.J.

[554] *Id.*

of the 1996 Act.[555] We are not persuaded by PacTel's argument that it is unnecessary for our rules to permit the identification of additional elements, beyond those specifically referenced in parts of the 1996 Act, because our rules must conform to the definition of a network element, and they must accommodate changes in technology. Nor are we persuaded by BellSouth that identification of network elements should be left solely to the parties. We reject this approach for the same reasons that led us to adopt national unbundling requirements.[556] Finally, we agree with NYNEX and others that we should not identify elements in rigid terms, but rather by function.

260. We agree with MCI and MFS that the definition of the term network element includes physical facilities, such as a loop, switch, or other node, as well as logical features, functions, and capabilities that are provided by, for example, software located in a physical facility such as a switch.[557] We further agree with MCI that the embedded features and functions within a network element are part of the characteristics of that element and may not be removed from it. Accordingly, incumbent LECs must provide network elements along with all of their features and functions, so that new entrants may offer services that compete with those offered by incumbents as well as new services.

261. The only limitation that the statute imposes on the definition of a network element is that it must be "used in the

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[555] *See, e.g.*, District of Columbia Commission comments at 21-22; MFS comments at 36.

[556] *See supra*, Sections II.A, II.B, V.B.

[557] MCI comments at 27-28; MFS comments at 36-37.

provision of a telecommunications service."[558] Incumbent LECs provide telecommunications services not only through network facilities that serve as the basis for a particular service, or that accomplish physical delivery, but also through information (such as billing information) that enables incumbents to offer services on a commercial basis to consumers. Our interpretation of the term "provision" finds support in the definition of the term "network element." That definition provides that the type of information that may constitute a feature or function includes information "used in the transmission, routing or other provision of a telecommunications service."[559] Since "transmission" and "routing" refer to physical delivery, the phrase "or other provision of a telecommunications service" goes beyond mere physical delivery.

262. We conclude that the definition of the term "network element" broadly includes all "facilit[ies] or equipment used in the provision of a telecommunications service," and all "features, functions, and capabilities that are provided by means of such facility or equipment, including subscriber numbers, databases, signaling systems, and information sufficient for billing and collection or used in the transmission, routing, or other provision of a a telecommunications service."[560] This definition thus includes, but is not limited to, transport trunks, call-related databases, software used in such databases, and all

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[558] 47 U.S.C. § 153(29).

[559] *Id.*

[560] *Id.*

other unbundled elements that we identify in this proceeding.[561] The definition also includes information that incumbent LECs use to provide telecommunications services commercially, such as information required for pre-ordering,[562] ordering, provisioning,[563] billing, and maintenance and repair services. This interpretation of the definition of the term "network element" will serve to guide both the Commission and the states in evaluating further unbundling requirements beyond those we identify in this proceeding.

263. We disagree with those incumbent LECs which argue that features that are sold directly to end users as retail services, such as vertical features, cannot be considered elements within incumbent LEC networks.[564] If we were to conclude that any functionality sold directly to end users as a service, such as call forwarding or caller ID, cannot be defined as a network element, then incumbent LECs could provide local service to end users by selling them unbundled loops and switch elements, and thereby entirely evade the unbundling requirement in section 251(c)(3).[565] We are confident that Congress did not intend such a result. We further reject Ameritech's argument that we should not permit carriers to use unbundled elements to provide services that are priced above cost at retail. We agree with those parties that argue that competition will not develop

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[561] *See infra*, V.J.

[562] *See infra*, Section V.J.5, for a definition of pre-ordering services.

[563] The term "provisioning" includes installation.

[564] *See infra*, Section V.J, discussing vertical features and noting that the Illinois Commission has rejected arguments that vertical features cannot be incorporated into network elements.

[565] *See, e.g.*, CompTel reply at 20-22.

if we find that supracompetitive pricing is protected by the 1996 Act.[566]

264. Moreover, we agree with those commenters that argue that network elements are defined by facilities or their functionalities or capabilities, and thus, cannot be defined as specific services. A single network element could be used to provide many different services. For example, a local loop can be used to provision inter- and intrastate exchange access services, as well as local exchange services. We conclude, consistent with the findings of the Ohio and Oregon Commissions, that the plain language of section 251(c)(3) does not obligate carriers purchasing access to network elements to provide all services that an unbundled element is capable of providing or that are typically offered over that element.[567] Section 251(c)(3) does not impose any service-related restrictions or requirements on requesting carriers in connection with the use of unbundled elements.

D. Access to Network Elements

1. Background

265. In the NPRM, we observed that section 251(c)(3) requires incumbent LECs to provide "access" to network elements "on an unbundled basis."[568] We interpreted these

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[566] *See, e.g.*, DoJ reply at 23-31; CompTel reply at 13-22. For a discussion of the argument that allowing new entrants to purchase vertical features as unbundled elements would nullify section 251(c)(4), *see infra*, Section V.H.

[567] Ohio Commission comments at 33; Oregon Commission comments at 27.

[568] 47 U.S.C. § 251(c)(3).

terms to mean that incumbent LECs must provide carriers with the functionality of a particular element, separate from the functionality of other elements, and must charge a separate fee for each element. We sought comment on this interpretation and any alternative interpretations.[569]

2. Comments

266. A number of parties agree with our interpretation that the phrase "access to network elements on an unbundled basis" means that incumbent LECs must provide access to the functionality of different elements on a separate basis, and must charge separate fees.[570] In contrast, PacTel argues that the 1996 Act does not require the provision of an element's functionality, but merely requires incumbent LECs to provide elements in a way that allows carriers to combine them and offer a telecommunications service. PacTel nevertheless acknowledges that agreements will likely allow for the provision of an element's functionality.[571]

267. Bell Atlantic and USTA argue that "access" to unbundled elements can only be achieved by interconnecting, under the terms of section 251(c)(2), a requesting carrier's

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[569] NPRM at para. 86.

[570] BellSouth comments at 34; MFS comments at 41; Cable & Wireless comments at 26-27; MCI comments at 12-20; Ericsson comments at 4; District of Columbia Commission comments at 22; Nextel comments at 8; USTA comments at 26; Colorado Commission comments at 27; Pennsylvania Commission comments at 24-25; GTE comments at 27; Florida Commission comments at 19; GST comments at 19.

[571] PacTel comments at 44-47.

facilities to the facilities of the incumbent LEC at a particular point.[572]

3. Discussion

268. We conclude that we should adopt our proposed interpretation that the terms "access" to network elements "on an unbundled basis" mean that incumbent LECs must provide the facility or functionality of a particular element to requesting carriers, separate from the facility or functionality of other elements, for a separate fee. We further conclude that a telecommunications carrier purchasing access to an unbundled network facility is entitled to exclusive use of that facility for a period of time, or when purchasing access to a feature, function, or capability of a facility, a telecommunications carrier is entitled to use of that feature, function, or capability for a period of time. The specified period may vary depending on the terms of the agreement between the incumbent LEC and the requesting carrier. The ability of other carriers to obtain access to a network element for some period of time does not relieve the incumbent LEC of the duty to maintain, repair, or replace the unbundled network element.[573] We reject PacTel's interpretation of the terms quoted above because it is inconsistent with our definition of the term network element (*i.e.*, an element includes all features and functions embedded

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[572] Bell Atlantic comments at 13; USTA comments at 62-63; *see also* GTE comments at 74-79; Letter from Antoinette Cook Bush, Counsel for Ameritech, to William F. Caton, Secretary, FCC, July 10, 1996; *cf.* DoJ comments at 45 (the requirement in section 251(c)(2) that carriers must offer either local exchange or exchange access services does not apply to the carriers offering services using unbundled elements).

[573] We clarify that title to unbundled network elements will not shift to requesting carriers.

in it). Moreover, to the extent that PacTel's argument suggests that the 1996 Act does not require unbundled elements to be provisioned in a way that would make them useful, we find that its statutory interpretation is inconsistent with the statute's goal of providing new entrants with realistic means of competing against incumbents.

269. We further conclude that "access" to an unbundled element refers to the means by which requesting carriers obtain an element's functionality in order to provide a telecommunications service. Just as section 251(c)(2) requires "interconnection ... at any technically feasible point," section 251(c)(3) requires "access ... at any technically feasible point."[574] We conclude, based on the terms of sections 251(c)(2), 251(c)(3), and 251(c)(6), that an incumbent LEC's duty to provide "access" constitutes a duty to provide a connection to a network element independent of any duty imposed by subsection (c)(2). Thus, such "access" must be provided under the rates, terms, and conditions that apply to unbundled elements.

270. Specifically, section 251(c)(6) provides that incumbent LECs must provide "physical collocation of equipment necessary for interconnection *or* access to unbundled network elements."[575] The use of the term "or" in this phrase means that interconnection is different from "access" to unbundled elements. The text of sections 251(c)(2) and (c)(3) leads to the same conclusion. Section 251(c)(2) requires that interconnection beprovided for "the transmission and routing of

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[574] 47 U.S.C. §§ 251(c)(2), 251(c)(3).

[575] 47 U.S.C. § 251(c)(6) (emphasis added).

telephone exchange service and exchange access."[576] Section 251(c)(3), in contrast, requires the provision of access to unbundled elements to allow requesting carriers to provide "a telecommunications service."[577] The term "telecommunications service" by definition includes a broader range of services than the terms "telephone exchange service and exchange access."[578] Subsection (c)(3), therefore, allows unbundled elements to be used for a broader range of services than subsection (c)(2) allows for interconnection. If we were to conclude that "access" to unbundled elements under subsection (c)(3) could only be achieved by means of interconnection under subsection (c)(2), we would be limiting, in effect, the uses to which unbundled elements may be put, contrary to the plain language of section 251(c)(3) and standard canons of statutory construction.[579]

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277. Sections 251(c)(3) and 251(d)(2) set forth standards the Commission must consider in identifying unbundled network elements that incumbent LECs must make available in connection with arbitrations before state commissions and BOC statements of generally available terms and conditions. These standards guide the unbundling requirements we issue today as

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[576] 47 U.S.C. § 251(c)(2).

[577] 47 U.S.C. § 251(c)(3).

[578] *See* 47 U.S.C. § 153(16),(46),(47).

[579] *See, e.g.*, DoJ comments at 35-47.

well as any different or additional unbundling requirements we may issue in the future. Similarly, the states must follow our interpretation of these standards to the extent they impose additional unbundling requirements during arbitrations or subsequent rulemaking proceedings

278. Section 251(c)(3) requires incumbent LECs to provide requesting carriers with "nondiscriminatory access to network elements on an unbundled basis at any technically feasible point."[602] We find that this clause imposes on an incumbent LEC the duty to provide all network elements for which it is technically feasible to provide access on an unbundled basis. Because section 251(d)(1) requires us to "establish regulations to implement the requirements of" section 251(c)(3), we conclude that we have authority to establish regulations that are coextensive with the duty section 251(c)(3) imposes on incumbent LECs.

279. Section 251(d)(2), however, sets forth standards that do not depend on technical feasibility. More specifically, section 251(d)(2) provides that, in identifying unbundled elements, the Commission shall "consider, at a minimum," whether access to proprietary elements is necessary (the "proprietary standard"), and whether requesting carriers' ability to provide services would be impaired if the desired elements were not provided by an incumbent LEC (the "impairment standard.") Thus, section 251(d)(2) gives us the authority to decline to require incumbent LECs to provide access to unbundled network elements at technically feasible points if, for example, we were to conclude that access to a particular proprietary element is not necessary. To give effect to both sections 251(c)(3) and 251(d)(2), we conclude that the proprietary and impairment standards in section 251(d)(2) grant us the authority to refrain from requiring

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[602] 47 U.S.C. § 251(c)(3).

incumbent LECs to provide all network elements for which it is technically feasible to provide access on an unbundled basis. The authority we derive from section 251(d)(2) is limited, however, by our interpretation of these standards, and this section, as set forth below.

280. We agree with BellSouth, SBC, and others that the plain import of the "at minimum" language in section 251(d)(2) requires us, in identifying unbundled network elements, to "consider" the standards enumerated there, as well as other standards we believe are consistent with the objectives of the 1996 Act. We conclude that the word "consider" means we must weigh the standards enumerated in section 251(d)(2) in evaluating whether to require the unbundling of a particular element.

281. We further conclude that, in evaluating whether to impose additional unbundling requirements during the arbitration process, states must apply our definition of technical feasibility, discussed above in section IV.D. A determination of technical feasibility would then create a presumption in favor of requiring an incumbent LEC to provide the element. If providing access to an unbundled element is technically feasible, a state must then consider the standards set forth in section 251(d)(2), as we interpret them below. Similarly, the Commission will apply this analysis where we must arbitrate specific unbundling issues, under section 252(e)(5), and in future rulemaking proceedings that may consider additional or possibly different unbundling requirements.

282. Section 251(d)(2)(A) requires the Commission and the states to consider whether access to proprietary elements is "necessary." "Necessary" means, in this context, that an element is a prerequisite for competition. We believe that, in some instances, it will be "necessary" for new entrants to obtain access to proprietary elements (*e.g.*, elements with proprietary protocols or elements containing proprietary information),

because without such elements, their ability to compete would be significantly impaired or thwarted.[603] Thus, as an initial matter, we decline to adopt a general rule, as suggested by some incumbents, that would prohibit access to such elements, or make access available only upon a carrier demonstrating a heavy burden of need. We acknowledge that prohibiting incumbents from refusing access to proprietary elements could reduce their incentives to offer innovative services. We are not persuaded, however, that this is a sufficient reason to prohibit generally the unbundling of proprietary elements, because the threat to competition from any such prohibition would far exceed any costs to consumers resulting from reduced innovation by the incumbent LEC.[604] Moreover, the procompetitive effects of our conclusion generally will stimulate innovation in the market, offsetting any hypothetical reduction in innovation by the incumbent LECs.

283. We further conclude that, to the extent new entrants seek additional elements beyond those we identify herein, section 251(d)(2)(A) allows the Commission and the states to require the unbundling of such elements unless the incumbent can prove to a state commission that: (1) the element is proprietary, or contains proprietary information that will be revealed if the element is provided on an unbundled basis; and

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[603] As noted *supra*, Section V.E.2, a number of commenters argue that section 251(d)(2)(A) requires us to protect proprietary information, such as CPNI information, contained in network elements. We intend to treat issues regarding CPNI in our rulemaking proceeding on CPNI information. *Telecommunications Carriers' Use of Customer Proprietary Network Information and Other Customer Information*, CC Docket No. 96-115, Notice of Proposed Rulemaking, FCC 96-221 (rel. May 17, 1996).

[604] In this proceeding, for example, we are requiring incumbent LECs to provide the local switching element which includes vertical features that some carriers contend are proprietary. *See infra*, Section V.J.

(2) a new entrant could offer the same proposed telecommunications service through the use of other, nonproprietary unbundled elements within the incumbent's network. We believe this interpretation of section 251(d)(2)(A) will best advance the procompetitive purposes of the 1996 Act. It allows new entrants to obtain proprietary elements from incumbent LECs where they are necessary to offer a telecommunications service, and, at the same time, it gives incumbents the opportunity to argue, before the states or the Commission, against unbundling proprietary elements where a new entrant could offer the same service using other unbundled elements in the incumbent's network. We decline to adopt the interpretation of section 251(d)(2)(A) advanced by some incumbents that incumbent LECs need not provide proprietary elements if requesting carriers can obtain the requested proprietary element from a source other than the incumbent. Requiring new entrants to duplicate unnecessarily even a part of the incumbent's network could generate delay and higher costs for new entrants, and thereby impede entry by competing local providers and delay competition, contrary to the goals of the 1996 Act.

284. We further conclude that, to the extent new entrants do not need access to all the proprietary information contained within an element in order to provide a telecommunications service, the Commission and the states may take action to protect the proprietary information. For example, to provide a telecommunications service, a new entrant might need access to information about a particular customer that is in an incumbent LEC database. The database to which the new entrant requires access, however, may contain proprietary information about all of the incumbent LECs' customers. In this circumstance, the new entrant should not have access to proprietary information about the incumbent LEC's other customers where it is not necessary to provide service to the new entrant's particular

customer. Accordingly, we believe the Commission and the states have the authority to protect the confidentiality of proprietary information in an unbundled network element, such as a database, where that information is not necessary to enable a new entrant to offer a telecommunications service to its particular customer.

285. Section 251(d)(2)(B) requires us to consider whether the failure to provide access to an element would "impair" the ability of a new entrant to provide a service it seeks to offer. The term "impair" means "to make or cause to become worse; diminish in value."[605] We believe, generally, that an entrant's ability to offer a telecommunications service is "diminished in value" if the quality of the service the entrant can offer, absent access to the requested element, declines and/or the cost of providing the service rises. We believe we must consider this standard by evaluating whether a carrier could offer a service using other unbundled elements within an incumbent LEC's network. Accordingly, we interpret the "impairment" standard as requiring the Commission and the states, when evaluating unbundling requirements beyond those identified in our minimum list, to consider whether the failure of an incumbent to provide access to a network element would decrease the quality, or increase the financial or administrative cost of the service a requesting carrier seeks to offer, compared with providing that service over other unbundled elements in the incumbent LEC's network.

286. We decline to adopt the interpretation of the "impairment" standard advanced by most BOCs and GTE. Under their interpretation, incumbent LECs must provide unbundled elements only when the failure to do so would prevent a carrier from offering a service. We also reject the

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[605] *See* Random House College Dictionary 665 (rev. ed. 1984).

related interpretations that carriers are not impaired in their ability to provide a service if they can obtain elements from another source, or if they can provide the proposed service by purchasing the service at wholesale rates from a LEC. In general, and as discussed above, section 251(c)(3) imposes on incumbent LECs the obligation to offer on an unbundled basis all network elements for which it is technically feasible to provide access. We believe the plain language of section 251(d)(2), and the standards articulated there, give us the discretion to limit the general obligation imposed by subsection 251(c)(3), but they do not require us to do so. The standards set forth in section 251(d)(2) are minimum considerations that the Commission shall take into account in evaluating unbundling requirements. Accordingly, we conclude that the statute does not require us to interpret the "impairment" standard in a way that would significantly diminish the obligation imposed by section 251(c)(3).

287. The interpretation advanced by most of the BOCs and GTE, described above, means that, if a requesting carrier could obtain an element from a source other than the incumbent, then the incumbent need not provide the element. We agree with the reasoning advanced by some of the commenters that this interpretation would nullify section 251(c)(3) because, in theory, any new entrant could provide all of the elements in the incumbents' networks. Congress made it possible for competitors to enter local markets through the purchase of unbundled elements because it recognized that duplication of an incumbent's network could delay entry, and could be inefficient and unnecessary.[606] The interpretation proffered by the BOCs and GTE would inhibit new entry and thus restrict the potential for meaningful competition, which would undermine the

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[606] *See* LDDS comments at 37, reply at 14-15.

procompetitive goals of the 1996 Act. As a practical matter, if it is more efficient and less costly for new entrants to obtain network elements from a source other than an incumbent LEC, new entrants will likely pursue the more efficient and less costly approach. Additionally, as discussed above at section IV.C, we believe that allowing incumbent LECs to deny access to unbundled elements on the grounds that an element is equivalent to a service available at resale would lead to impractical results, because incumbents could completely avoid section 251(c)(3)'s unbundling obligations by offering unbundled elements to end users as retail services.[607]

288. Finally, we decline at this time to adopt any of the additional criteria proposed by commenters. We conclude that none of the additional factors suggested by commenters enhances our ability to identify unbundled network elements consistent with the procompetitive goals of the 1996 Act.[608] These additional considerations would limit unbundling requirements or make it administratively more difficult for new entrants to obtain additional unbundled elements beyond those identified in our minimum list of required elements. For example, we believe that the proposal that new entrants must provide detailed estimates regarding projected market demand is not necessary for incumbent LECs to efficiently plan for network growth.

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[607] *See infra*, Section V.H, for a further discussion on the relationship between sections 251(c)(3) and 251(c)(4).

[608] *See, e.g.*, Texas Public Utility Counsel comments at 9-11; Cincinnati Bell comments at 15; Nortel comments at 6 (the diversion of research and development efforts to facilities that new entrants do not really want will stifle innovation); SBC comments at 25-37, 84-99.

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292. Under section 251(c)(3), incumbent LECs must provide access to "unbundled network elements in a manner that allows requesting carriers to combine such elements in order to provide" a telecommunications service.[619] We agree with the Illinois Commission, the Texas Public Utility Counsel, and others that this language bars incumbent LECs from imposing limitations, restrictions, or requirements on requests for, or the sale or use of, unbundled elements that would impair the ability of requesting carriers to offer telecommunications services in the manner they intend. For example, incumbent LECs may not restrict the types of telecommunications services requesting carriers may offer through unbundled elements, nor may they restrict requesting carriers from combining elements with any technically compatible equipment the requesting carriers own. We also conclude that section 251(c)(3) requires incumbent LECs to provide requesting carriers with all of the functionalities of a particular element, so that requesting carriers can provide any telecommunications services that can be offered by means of the element. We believe this interpretation provides new entrants with the requisite ability to use unbundled elements flexibly to respond to market forces, and thus is consistent with the procompetitive goals of the 1996 Act.

293. We agree with AT&T and Comptel that the quoted text in section 251(c)(3) bars incumbent LECs from separating elements that are ordered in combination, unless a requesting carrier specifically asks that such elements be separated. We

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[619] 47 U.S.C. § 251(c)(3).

also conclude that the quoted text requires incumbent LECs, if necessary, to perform the functions necessary to combine requested elements in any technically feasible manner either with other elements from the incumbent's network, or with elements possessed by new entrants, subject to the technical feasibility restrictions discussed below. We adopt these conclusions for two reasons. First, in practice it would be impossible for new entrants that lack facilities and information about the incumbent's network to combine unbundled elements from the incumbents' network without the assistance of the incumbent. If we adopted NYNEX's proposal, we believe requesting carriers would be seriously and unfairly inhibited in their ability to use unbundled elements to enter local markets. We therefore reject NYNEX's contention that the statute requires requesting carriers, rather than incumbents, to combine elements. We do not believe it is possible that Congress, having created the opportunity to enter local telephone markets through the use of unbundled elements, intended to undermine that opportunity by imposing technical obligations on requesting carriers that they might not be able to readily meet.

294. Second, given the practical difficulties of requiring requesting carriers to combine elements that are part of the incumbent LEC's network, we conclude that section 251(c)(3) should be read to require incumbent LECs to combine elements requested by carriers. More specifically, section 251(c)(3) provides that incumbent LECs must provide unbundled elements "in a manner that allows requesting carriers to combine them" to provide a telecommunications service. We believe this phrase means that incumbents must provide unbundled elements in a way that *enables* requesting carriers to combine them to provide a service. The phrase "allows requesting carriers to combine them," does not impose the obligation of physically combining elements exclusively on requesting carriers. Rather, it permits a requesting carrier to

combine the elements if the carrier is reasonably able to do so. If the carrier is unable to combine the elements, the incumbent must do so.[620]

295. Our conclusion that incumbent LECs must combine unbundled elements when so requested is consistent with the method we have adopted to identify unbundled network elements. Under our method, incumbents must provide, as a single, combined element, facilities that could comprise more than one element. This means, for example, that, if the states require incumbent LECs to provision subloop elements, incumbent LECs must still provision a local loop as a single, combined element when so requested, because we identify local loops as a single element in this proceeding.[621]

296. We decline to adopt the view proffered by some parties that incumbents must combine network elements in any technically feasible manner requested. This proposal necessarily means that carriers could request incumbent LECs to combine elements that are not ordinarily combined in the incumbent's network. We are concerned that, in some instances, this could potentially affect the reliability and security of the incumbent's network, and the ability of other carriers to obtain interconnection, or request and use unbundled elements. Accordingly, incumbent LECs are required to perform the functions necessary to combine those elements that are ordinarily combined within their network, in the manner in which they are typically combined. Incumbent LECs are also required to perform the functions necessary to combine elements, even if they are not ordinarily combined in that

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[620] In this context, we conclude that the term "combine" means connecting two or more unbundled network elements in a manner that would allow a requesting carrier to offer the telecommunications service it seeks to offer.

[621] *See infra*, Section V.J.

manner, or they are not ordinarily combined in the incumbent's network, provided that such combination is technically feasible,[622] or such combination would not undermine the ability of other carriers to access unbundled elements or interconnect with the incumbent LEC's network. Incumbent LECs must prove to state commissions that a request to combine particular elements in a particular manner is not technically feasible, or that the request would undermine the ability of other carriers to access unbundled elements and interconnect because they have the information to support such a claim.

297. We agree with Sprint and the Florida Commission, respectively, that in some cases incumbent LECs may be required to provision a particular element in different ways, depending on the service a requesting carrier seeks to offer; and, in other instances, where a new entrant needs a particular variant of an element to offer a service, that element should be treated as distinct from other variants of the element. This means, for example, that we will treat local loops with a particular type of conditioning[623] as distinct elements that are different from loops with other types of conditioning.[624] As discussed below, we agree with CompTel that incumbent LECs must provide the operational and support systems necessary for requesting carriers to purchase and combine network elements. Incumbent LECs use these systems to provide services to their own end users, and new entrants similarly must have access to them to provide telecommunications services using unbundled

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[622] As discussed in Section IV, effects on network reliability and security are factors to be considered in determining technical feasibility.

[623] For an explanation of what conditioning of a local loop means *see infra*, Section V.J.1.

[624] Florida Commission comments at 22.

elements.[625] Finally, we agree with BellSouth that requesting carriers must specify to incumbent LECs the network elements they seek before they can obtain such elements on an unbundled basis. We do not believe, however, that it will always be possible for new entrants to do this either before negotiations (or arbitrations) begin, or before they end, because new entrants will likely lack knowledge about the facilities and capabilities of a particular incumbent LEC's network. We further believe that incumbent LECs must work with new entrants to identify the elements the new entrants will need to offer a particular service in the manner the new entrants intend.

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¶¶ 307 - 314

307. We agree with those commenters, including the Florida, Illinois and Washington Commissions, that to achieve the procompetitive goals of the 1996 Act, it is necessary to establish rules that define the obligations of incumbent LECs to provide nondiscriminatory access to unbundled network elements, and to provide such elements on terms and conditions that are just, reasonable and nondiscriminatory.[671] As discussed above at sections II.A, II.B and V.B, we believe that incumbent LECs have little incentive to facilitate the ability of new entrants, including small entities, to compete against them and, thus, have little incentive to provision unbundled elements in a manner that would provide efficient competitors with ameaningful opportunity to compete. We are also cognizant of

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[625] Incumbent LEC back-office systems are discussed in Section V.J.

[671] *See infra*, Section VII, for a discussion of just, reasonable and nondiscriminatory rates for unbundled network elements.

the fact that incumbent LECs have the incentive and the ability to engage in many kinds of discrimination. For example, incumbent LECs could potentially delay providing access to unbundled network elements, or they could provide them to new entrants at a degraded level of quality.

308. Consistent with arguments advanced by the Florida and Washington Commissions, incumbent LECs, and potential competitors, and as more fully discussed in the specific sections below, we adopt general, national rules defining "nondiscriminatory access" to unbundled network elements, and "just, reasonable, and nondiscriminatory" terms and conditions for the provision of such elements. We have chosen this approach, rather than allowing states exclusively to consider these issues, because we believe that some national rules regarding nondiscriminatory access will reduce the costs of entry and speed the development of competition.[672]

309. We conclude, for example, that national rules defining the 1996 Act's requirements regarding nondiscriminatory access to, and provision of, unbundled elements will reduce costs associated with potential litigation over these issues, and will enable states to conduct arbitrations more quickly by reducing the number of issues they must consider. Such rules will also facilitate the ability of the Commission to conduct arbitrations, should we assume a state's responsibilities under section 252(e)(5). We conclude further that such rules will create some uniformity across states in connection with the terms under which new entrants may obtain access to network elements, thus facilitating the ability of potential competitors, including small entities, to enter local markets on a regional or national scale. Accordingly, for all of these reasons, we reject the arguments of PacTel and USTA that we should not adopt

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[672] *See supra*, Section V.B.

national rules relating to incumbent LEC obligations to provide access to, and provision, unbundled elements in a nondiscriminatory manner.

310. The record compiled in this proceeding supports the adoption of uniform general rules that rely on states to develop more specific requirements in arbitrations and other state proceedings. More significantly, however, we agree with the California and Florida Commissions that the states are best situated to issue specific rules because of their existing knowledge regarding incumbent LEC networks, capabilities, and performance standards in their separate jurisdictions and because of the role they will play in conducting mediations, arbitrations, and approving agreements. We expect that the states will implement the general nondiscrimination rules set forth herein by adopting, *inter alia*, specific rules determining the timing in which incumbent LECs must provision certain elements, and any other specific conditions they deem necessary to provide new entrants, including small competitors, with a meaningful opportunity to compete in local exchange markets. The states will continue to gain expertise in connection with issues relating to just, reasonable, and nondiscriminatory access and provision of unbundled network elements. We expect to turn to the states, and rely on the expertise they develop in this area, when we review and revise our rules as necessary.

311. We agree with those commenters that argue that incumbent LECs should be required to fulfill some type of reporting requirement to ensure that they provision unbundled elements in a nondiscriminatory manner. We believe the record is insufficient at this time to adopt such requirements, and we may reexamine this issue in the future. We encourage the

states, however, to adopt reporting requirements.[673] We decline to address whether the Commission should consider any of the terms and conditions adopted here in evaluating BOC applications to provide in-region long distance services. We will consider this issue, as it arises, when we evaluate individual BOC applications.

a. Nondiscriminatory Access to Unbundled Network Elements

312. We conclude that the obligation to provide "nondiscriminatory access to network elements on an unbundled basis"[674] refers to both the physical or logical connection to the element and the element itself. In considering how to implement this obligation in a manner that would achieve the 1996 Act's goal of promoting local exchange competition, we recognize that new entrants, including small entities, would be denied a meaningful opportunity to compete if the quality of the access to unbundled elements provided by incumbent LECs, as well as the quality of the elements themselves, were lower than what the incumbent LECs provide to themselves. Thus, we conclude it would be insufficient to define the obligation of incumbent LECs to provide "nondiscriminatory access" to mean that the quality of the access and unbundled elements incumbent LECs provide to all requesting carriers is the same. As discussed above with

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[673] We address issues regarding enforcement of the rules we adopt in this Section, regarding nondiscriminatory access to, and just, reasonable and nondiscriminatory terms and conditions for the provision of unbundled network elements, at *supra*, in Section II.E.

[674] 47 U.S.C. § 251(c)(3).

respect to interconnection,[675] an incumbent LEC could potentially act in a nondiscriminatory manner in providing access or elements to all requesting carriers, while providing preferential access or elements to itself. Accordingly, we conclude that the phrase "nondiscriminatory access" in section 251(c)(3) means at least two things: first, the quality of an unbundled network element that an incumbent LEC provides, as well as the access provided to that element, must be equal between all carriers requesting access to that element; second, where technically feasible, the access and unbundled network element provided by an incumbent LEC must be at least equal-in-quality to that which the incumbent LEC provides to itself.[676]

313. We believe that Congress set forth a "nondiscriminatory access" requirement in section 251(c)(3), rather then an absolute equal-in-quality requirement, such as that set forth in section 251(c)(2)(C), because, in rare circumstances, it may be technically infeasible for incumbent LECs to provide requesting carriers with unbundled elements, and access to such elements, that are equal-in-quality to what the incumbent LECs provide themselves. According to some commenters, this problem arises in connection with one variant of one of the unbundled network elements we identify in this order. These commenters argue that a carrier purchasing access to a 1AESS local switch may not be able to receive, for example, the full measure of customized routing features that such a switch may afford the

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[675] *See supra*, Sections IV.G, IV.H.

[676] We note that providing access or elements of lesser quality than that enjoyed by the incumbent LEC would also constitute an "unjust" or "unreasonable" term or condition.

incumbent.[677] In the rare circumstances where it is technically infeasible for an incumbent LEC to provision access or elements that are equal-in-quality, we believe disparate access would not be inconsistent with the nondiscrimination requirement. Accordingly, we require incumbent LECs to provide access and unbundled elements that are at least equal-in-quality to what the incumbent LECs provide themselves, and allow for an exception to this requirement only where it is technically infeasible to meet.[678] We expect incumbent LECs to fulfill this requirement in nearly all instances where they provision unbundled elements because we believe the technical infeasibility problem will arise rarely. We further conclude, however, that the incumbent LEC must prove to a state commission that it is technically infeasible to provide access to unbundled elements, or the unbundled elements themselves, at the same level of quality that the incumbent LEC provides to itself.

314. Our conclusion that an incumbent LEC must provide unbundled elements, as well as access to them, that is "at least" equal in quality to that which the incumbent provides itself, does not excuse incumbent LECs from providing, when requested and where technically feasible, access or unbundled elements of higher quality.[679] As we discuss below,[680] we do

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[677] *See infra*, Section V.J, discussing commenters' arguments regarding the possible technical limitations of such switches.

[678] The exception described here does not excuse incumbent LECs from the obligation to modify elements within their networks to allow requesting carriers to obtain access to such elements where this is technically feasible. *See supra*, Section IV.D.

[679] An incumbent LEC, in accommodating a carrier's request for a particular unbundled element, may ultimately provision an element that is

(continued...)

not believe that this obligation is unduly burdensome to incumbent LECs because the 1996 Act requires a requesting carrier to pay the costs of unbundling, and thus incumbent LECs will be fully compensated for any efforts they make to increase the quality of access or elements within their own network.[681] Moreover, to the extent this obligation allows new entrants, including small entities, to offer services that are different from those offered by the incumbent, we believe it is consistent with Congress's goal to promote local exchange competition. We note that, to the extent an incumbent LEC provides an element with a superior level of quality to a particular carrier, the incumbent LEC must provide all other requesting carriers with the same opportunity to obtain that element with the equivalent higher level of quality. We further note that where a requesting carrier specifically requests access or unbundled elements that are lower in quality to what the incumbent LECs provide themselves, incumbent LECs may offer such inferior quality if it is technically feasible. Finally, we conclude that the incumbent LEC must prove to a state commission that it is technically infeasible to provide access to unbundled elements, or the unbundled elements themselves, at a level of quality that is superior to or lower than what the incumbent LEC provides to itself.

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[679] (...continued)
higher in quality than what the incumbent provides to itself. *See infra*, Section V.J.1.

[680] *See infra*, Section V.J. We require, for example, that incumbent LECs provide local loops conditioned to enable the provision of digital services (where technically feasible) even if the incumbent does not itself provide such digital services.

[681] *See infra*, Section VII.

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329. We reject the arguments advanced by Bell Atlantic and NYNEX that the language of section 251(c)(3) requires carriers seeking access to unbundled elements to own some local exchange facilities, and that this serves to distinguish section 251(c)(3) from section 251(c)(4). The "at any technically feasible point" language in section 251(c)(3) refers to points in an incumbent LEC's network where new entrants may obtain access to elements. It does not, however, require that new entrants interconnect local exchange facilities which they own or control at that technically feasible access point. If we were to conclude otherwise, then new entrants would be prohibited from requesting two network elements that are connected to each other because the new entrant would be required to connect a single network element to a facility of its own. The 1996 Act, however, does not impose any limitations on carriers' ability to obtain access to unbundled network elements. Moreover, we conclude that Congress did not intend to limit access to unbundled elements in this manner because such a limit would seriously inhibit the ability of potential competitors to enter local markets through the use of unbundled elements, and thus would retard the development of local exchange competition. We also reject NYNEX's argument that the phrase "such telecommunications service" excludes services provided by the incumbent. This interpretation is inconsistent with the 1996 Act's definition of a telecommunications service, which includes all telecommunications services provided by an incumbent.

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¶¶ 332 - 333

332. The principal distinction between sections 251(c)(3) and 251(c)(4), in terms of the opportunities each section presents to new entrants, is that carriers using solely unbundled elements, compared with carriers purchasing services for resale, will have greater opportunities to offer services that are different from those offered by incumbents. More specifically, carriers reselling incumbent LEC services are limited to offering the same service an incumbent offers at retail. This means that resellers cannot offer services or products that incumbents do not offer. The only means by which a reseller can distinguish the services it offers from those of an incumbent is through price, billing services, marketing efforts, and to some extent, customer service. The ability of a reseller to differentiate its products based on price is limited, however, by the margin between the retail and wholesale price of the product.

333. In contrast, a carrier offering services solely by recombining unbundled elements can offer services that differ from those offered by an incumbent. For example, some incumbent LECs have capabilities within their networks, such as the ability to offer Centrex, which they do not use to offer services to consumers. Carriers purchasing access to unbundled elements can offer such services. Additionally, carriers using unbundled elements can bundle services that incumbent LECs sell as distinct tariff offerings, as well as services that incumbent LECs have the capability to offer, but do not, and can market them as a bundle with a single price. The ability to package and market services in ways that differ from the incumbent's existing service offerings increases the requesting carrier's ability to compete against the incumbent and is likely

to benefit consumers.[709] Additionally, carriers solely using unbundled network elements can offer exchange access services. These services, however, are not available for resale under section 251(c)(4) of the 1996 Act.[710]

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¶¶ 377 - 396

377. We conclude that incumbent LECs must provide local loops on an unbundled basis to requesting carriers. We note that the Joint Explanatory Statement lists local loops as an example of an unbundled network element.[816] As discussed below, the record demonstrates that it is technically feasible for incumbent LECs to provide access to unbundled local loops, and that such access is critical to encouraging market entry. Further, the competitive checklist contained in section 271 requires BOCs to offer unbundled loops separate from switching as a precondition to entry into the in-region, interLATA services market.[817]

378. Requiring incumbent LECs to make available unbundled local loops will facilitate market entry and improve consumer welfare. Without access to unbundled local loops, new entrants would need to invest immediately in duplicative facilities in order to compete for customers. Such investment

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[709] *See* AT&T comments at 25-31.

[710] *See infra*, Section VII; *see also* Letter from Bernard J. Ebbers, President LDDS WorldCom, to Rachelle B. Chong, Commissioner, Federal Communications Commission, July 11, 1996.

[816] Joint Explanatory Statement at 116.

[817] 47 U.S.C. § 271(c)(2)(B).

and building would likely delay market entry and postpone the benefits of local telephone competition for consumers. Moreover, without access to unbundled oops, new entrants would be required to make a large initial sunk investment in loop facilities before they had a customer base large enough to justify such an expenditure.[818] This would increase the risk of entry and raise the new entrant's cost of capital. By contrast, the ability of a new entrant to purchase unbundled loops from the incumbent LEC allows the new entrant to build facilities gradually, and to deploy loops for its customers where it is efficient to do so. Moreover, in some areas, the most efficient means of providing competing service may be through the use of unbundled loops. In such cases, preventing access to unbundled loops would either discourage a potential competitor from entering the market in that area, thereby denying those consumers the benefits of competition, or cause the competitor to construct unnecessarily duplicative facilities, thereby misallocating societal resources.

379. Section 251(c)(3) requires incumbent LECs to provide access to unbundled elements "at any technically feasible point."[819] The vast majority of commenters, including incumbent LECs, agree with our tentative conclusion that it is technically feasible to provide access to unbundled local

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[818] As of year end 1995, Class A carriers reported $268 billion of total plant in service, of which $229 billion was classified as network plant. Local loop plant comprises approximately $109 billion of total plant in service, which represents 41 percent of total plant in service and 48 percent of network plant. *See* 1995 ARMIS Report 43-04.

[819] 47 U.S.C. § 251(c)(3).

loops,[820] and a number of commenters identify the main distribution frame in a LEC central office as an appropriate access point.[821] Moreover, access to unbundled loops is currently provided by several LECs pursuant to state unbundling requirements.[822] Thus, we conclude that it is technically feasible for incumbent LECs to provide access to unbundled local loops at, for example, a central office distribution frame.

380. We further conclude that the local loop element should be defined as a transmission facility between a distribution frame, or its equivalent, in an incumbent LEC central office, and the network interface device at the customer premises. This definition includes, for example, two-wire and four-wire analog voice-grade loops, and two-wire and four-wire loops that are conditioned to transmit the digital signals needed to provide services such as ISDN, ADSL, HDSL, and DS1-level signals.[823]

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[820] *See, e.g.*, PacTel reply at 18; New York Commission comments at 26; SBA comments at 13-14; TIA comments at 9; GTE reply at 18; NYNEX comments at 64-65.

[821] *See, e.g.*, Bell Atlantic comments, Albers Attachment at 6-8; Ameritech comments at 36.

[822] *See, e.g.*, Ameritech comments at 36 (by the end of 1996, over 45,000 of its unbundled loops will be used by interconnecting carriers); Frontier comments at 14 (Rochester Telephone is currently providing unbundled loops pursuant to tariff); *see also* Alabama Commission Comments at 18; Texas Commission comments at 17; New York Commission comments at 26; Arizona Commission comments, Exh. V at 8.

[823] ISDN (Integrated Services Digital Network) at the Basic Rate Interface level permits the transmission of digital signals over the loop at the rate of 144kbps, which provides two standard 64 kbps voice or data channels and a 16 kbps data channel. ISDN at the Primary Rate Interface permits 23 (continued...)

We note that a number of parties proposed definitions of the local loop that encompassed some or all of these loop types.[824] In addition, we agree with ITIC that the ability to offer various digital loop functions in competition with incumbent LECs may be particularly beneficial to small entities by allowing them to serve niche markets.[825]

381. Incumbent LECs are required to provide access to these transmission facilities only to the extent technically feasible. That is, if it is not technically feasible to condition a loop facility to support a particular functionality, the incumbent LEC need not provide unbundled access to that loop so conditioned. For example, a local loop that exceeds the maximum length allowable for the provision of a high-bit-rate digital service could not feasibly be conditioned for such service.[826] Such a situation may necessitate a request for subloop elements.[827] Nevertheless, section 251(c)(3) does not limit the types of

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[823] (...continued)
standard 64 kbps channels plus one 16 kbps data channel. ADSL (Asynchronous Digital Subscriber Line) is a transmission path that facilitates 6 Mbps digital signal downstream and 640 kbps digital signal upstream, while simultaneously carrying an analog voice signal. Two-wire HDSL (High-bit-rate Digital Subscriber Line) permits the transmission of a 768 kbps digital signal over a copper loop, while four-wire HDSL allows the transmission of 1.544 Mbps over two two- wire pairs.

[824] *See, e.g.*, MFS comments at 43-44; ALTS comments at 27; GST comments at 21-22; ACSI comments, Att. 1 at 2.

[825] ITIC comments at 7-8.

[826] Such loop conditioning may involve removing load coils or bridged taps that interfere with the transmission of digital signals.

[827] *See, e.g.*, Bell Atlantic reply at 10 n.11.

telecommunications services that competitors may provide over unbundled elements to those offered by the incumbent LEC.

382. Our definition of loops will in some instances require the incumbent LEC to take affirmative steps to condition existing loop facilities to enable requesting carriers to provide services not currently provided over such facilities. For example, if a competitor seeks to provide a digital loop functionality, such as ADSL, and the loop is not currently conditioned to carry digital signals, but it is technically feasible to condition the facility, the incumbent LEC must condition the loop to permit the transmission of digital signals. Thus, we reject BellSouth's position that requesting carriers "take the LEC networks as they find them" with respect to unbundled network elements.[828] As discussed above, some modification of incumbent LEC facilities, such as loop conditioning, is encompassed within the duty imposed by section 251(c)(3).[829] The requesting carrier would, however, bear the cost of compensating the incumbent LEC for such conditioning.[830]

383. We further conclude that incumbent LECs must provide competitors with access to unbundled loops regardless of whether the incumbent LEC uses integrated digital loop carrier technology, or similar remote concentration devices, for the particular loop sought by the competitor. IDLC technology allows a carrier to aggregate and multiplex loop traffic at a remote concentration point and to deliver that multiplexed

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[828] BellSouth comments at 39.

[829] *See supra* Section IV.D., interpreting the term "technically feasible." *See also* MFS comments at 43 (arguing that incumbent LECs condition loops in order to provide particular digital loop functionalities to their customers).

[830] *See supra* Section VII, discussing the recovery of costs under section 252(d)(1).

traffic directly into the switch without first demultiplexing the individual loops. If we did not require incumbent LECs to unbundle IDLC-delivered loops, end users served by such technologies would not have the same choice of competing providers as end users served by other loop types. Further, such an exception would encourage incumbent LECs to "hide" loops from competitors through the use of IDLC technology.

384. We find that it is technically feasible to unbundle IDLC-delivered loops. One way to unbundle an individual loop from an IDLC is to use a demultiplexer to separate the unbundled loop(s) prior to connecting the remaining loops to the switch. Commenters identify a number of other methods for separating out individual loops from IDLC facilities, including methods that do not require demultiplexing.[831] Again, the costs associated with these mechanisms will be recovered from requesting carriers.

385. We decline to define a loop element in functional terms, rather than in terms of the facility itself. Some parties advocate defining a loop element as merely a functional piece of a shared facility, similar to capacity purchased on a shared transport trunk.[832] According to these parties, this definition would enable an IXC to purchase a loop element solely for purposes of providing interexchange service. While such a definition, based on the types of traffic provided over a facility, may allow for the separation of costs for a facility dedicated to one end

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[831] Under more recent standards for IDLC facilities, a competitor's loop traffic could be separated from the incumbent LEC's loop traffic without the use of multiplexers. *See, e.g.*, MCI comments at 30 (IDLC loops can be moved onto other loop carrier links, or alternatively, can be removed from the mulitiplexed signal through "hair pinning").

[832] *See, e.g.*, Cable & Wireless comments at 26-27; ACTA comments at 17.

user, we conclude that such treatment is inappropriate. Giving competing providers exclusive control over network facilities dedicated to particular end users provides such carriers the maximum flexibility to offer new services to such end users. In contrast, a definition of a loop element that allows simultaneous access to the loop facility would preclude the provision of certain services in favor of others. For example, carriers wishing to provide solely voice-grade service over a loop would preclude another carrier's provision of a digital service, such as ISDN or ADSL, over that same loop.[833] We note that these two types of services could be provided by different carriers over, for example, separate two-wire loop elements to the same end user.

386. Incumbent LECs must provide cross-connect facilities, for example, between an unbundled loop and a requesting carrier's collocated equipment, in order to provide access to that loop. As we conclude in section IV.D, above, an incumbent LEC must take the steps necessary to allow a competitor to combine its own facilities with the incumbent LEC's unbundled network elements. We highlight this requirement for unbundled loops because of allegations by competitive providers that incumbent LECs have imposed unreasonable rates, terms, and conditions for such cross-connect facilities in the past.[834] Incumbent LECs may recover the cost of providing such facilities in accordance with our rules on the costs of interconnection and unbundling. Charges for all such facilities must meet the cost-based standard provided in section 252(d)(1), and the terms and conditions of providing these

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[833] Digital services such as ISDN and ADSL occupy the same frequency spectrum on a loop as ordinary voice- grade services.

[834] Intermedia comments at 8-9; Teleport comments at 36-37.

facilities must be reasonable and nondiscriminatory under section 251(c)(3).

387. At this time, we decline to adopt additional terms and conditions, such as the five-minute loop cutover requirement proposed by MFS, for loop provisioning. We agree with commenters who contend that the provisioning of unbundled local loops must be subject to close scrutiny to ensure that incumbent LECs do not delay loop cutover or otherwise complicate the acquisition of loops by a competitor. We conclude, however, that the rules we adopt in the Access to Unbundled Network Elements section that require nondiscriminatory terms and conditions for provisioning, billing, testing, and repair of unbundled elements, and the availability of electronic ordering systems, adequately address these concerns. We will continue to review and revise our rules in this area as necessary.

388. Section 251(d)(2)(A) requires the Commission to consider whether "access to such network elements as are proprietary in nature is necessary."[835] Most parties did not identify any proprietary concerns associated with providing unbundled access to local loops. Ericsson notes that some "active" loop equipment, such as channel banks and remote terminal equipment, is often proprietary in nature, and that manufacturers would require time to modify such equipment to create end-to-end network compatibility on a national basis.[836] Ericsson does not contend, however, that any proprietary information would be revealed if loops using such equipment were unbundled, or that use of such equipment should prevent

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[835] 47 U.S.C. § 251(d)(2)(A).

[836] Ericsson comments at 4.

loop unbundling in general.[837] Thus, we conclude that loop elements are, in general, not proprietary in nature under our interpretation of section 251(d)(2)(A). Even if loop elements were proprietary in nature, however, Ericsson does not meet the second consideration in our section 251(d)(2)(A) standard, which requires a showing that a new entrant can offer the proposed telecommunications service through the use of other, nonproprietary elements in the incumbent LEC's network.[838] Ericsson merely contends that manufacturers may need time to establish compatibility between its proprietary equipment and equipment of other manufacturers.[839] Therefore, we find that Ericsson's concerns do not justify withholding unbundled loops from requesting carriers pursuant to section 251(d)(2)(A).

389. Section 251(d)(2)(B) directs the Commission to consider whether "the failure to provide access to such network elements would impair the ability of the telecommunications carrier seeking access to provide the services that it seeks to offer."[840] We have interpreted the term "impair" to mean either increased cost or decreased service quality that would result from using network elements of the incumbent LEC other than the one sought.[841] Commenters do not identify alternative facilities that would fulfill requesting carriers' need for transmission between the central office and the customer

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[837] Ericsson's comments were in response to a question in the NPRM seeking comment on the need to accommodate new loop technologies or services. Ericsson comments at 4.

[838] *See supra* Section V.E.3.

[839] Ericsson comments at 4-5.

[840] 47 U.S.C. § 251(d)(2)(B).

[841] *See supra* Section V.E.3.

premises at the same cost and same quality of service. Accordingly, we conclude that competitors' ability to provide telephone exchange, exchange access, or other telecommunications services would be significantly impaired if they did not have the opportunity to purchase unbundled loops from incumbent LECs.

390. As a general matter, we believe that subloop unbundling could give competitors flexibility in deploying some portions of loop facilities, while relying on the incumbent LEC's facilities where convenient. For example, a competitor may seek to minimize its reliance on the LEC's facilities by combining its own feeder plant with the incumbent LEC's distribution plant.[842] In addition, some high bandwidth services, such as ADSL, cannot be provided over long loop lengths. ITIC, Compaq, and Intel assert that subloop unbundling would lead to innovative new data services.[843] In these situations, carriers would need access at points along the loop closer to the customer premises. The record presents evidence primarily of logistical, rather than technical, impediments to subloop

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[842] Subloop unbundling could have network efficiency advantages as well. One party notes that subloop unbundling could allow packetized data traffic to be shifted to a data network, rather than flowing through the circuit-switched network portions of the public switched network. *See* ITIC July 16 *Ex Parte*.

[843] ITIC July 16 *Ex Parte*, ITAA July 22 *Ex Parte*, Compaq July 23 Ex Parte, Intel July 25 *Ex Parte*. ITAA contends that subloop unbundling would allow data and other traffic to be routed before it reaches an incumbent LEC's central office switch. According to ITAA, such routing would moot incumbent LECs' argument that traffic from the Internet and other on-line services is negatively impacting their switches. ITAA July 19 *Ex Parte*.

unbundling.[844] Several LECs and USTA, for example, assert that incumbent LECs would need to create databases for identifying, provisioning, and billing for subloop elements.[845] Further, incumbent LECs argue that there is insufficient space at certain possible subloop interconnection points.[846] We note that these concerns do not represent "technical" considerations under our interpretation of the term "technically feasible."[847]

391. Nonetheless, we decline at this time to identify the feeder, feeder/distribution interface (FDI), and distribution components of the loop as individual network elements. We find that proponents of subloop unbundling do not address certain technical issues raised by incumbent LECs concerning subloop unbundling. Incumbent LECs contend that access by a competitor's personnel to loop equipment necessary to provide subloop elements, such as the FDI, raise network reliability concerns for customers served through that FDI.[848] SBC, for example, asserts that access to its loop concentration points by competitors would increase the risk of error by a competitor's technicians that may disrupt service to customers of one or both

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[844] *See, e.g.*, Sprint comments at 30-31; GTE comments at 33-34; NYNEX comments at 68-69; Bell Atlantic comments at 24 (all discussing a variety of tracking, billing, and maintenance issues that would be raised by subloop unbundling).

[845] USTA comments at 31; NYNEX comments at 69; Ameritech comments at 41; BellSouth comments at 39; U S West comments at 50.

[846] Bell Atlantic comments at 24; SBC comments at 38; NYNEX comments at 66.

[847] *See supra* Section IV.D.

[848] BellSouth comments at 39; NYNEX comments at 66; SBC comments at 39; U S West comments at 52 n.113; PacTel comments at 18.

carriers.[849] U S West contends that the potential for poor technical implementation of subloop interconnection and the lack of overall responsibility for loop performance is very likely to degrade overall service quality.[850] Proponents of subloop unbundling do not adequately respond to these arguments by incumbent LECs. As discussed above, we have determined that we must take into account specific, demonstrable claims regarding network reliability in determining whether to identify any particular component as an element that must be unbundled. Therefore, we believe that, at this stage, based on the current record evidence, the technical feasibility of subloop unbundling is best addressed at the state level on a case-by-case basis at this time.[851] Information developed by the parties in the context of a specific request for subloop unbundling will provide a useful framework for addressing the loop maintenance and network reliability matters that we have identified. Based on actions taken by the states or other future developments, and on the importance of subloop unbundling in light of technological advancements, we intend to revisit the specific issue of subloop unbundling sometime in 1997.

392. We require incumbent LECs to offer unbundled access to the network interface device (NID),[852] as a network element, as described below. When a competitor deploys its own loops, the competitor must be able to connect its loops to customers'

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[849] SBC comments at 39.

[850] U S West comments at 52 n.113.

[851] We encourage states to pursue subloop unbundling in response to requests for subloop elements by competing providers.

[852] The NID is a cross-connect device used to connect loop facilities to inside wiring.

inside wiring in order to provide competing service, especially in multi-tenant buildings. In many cases, inside wiring is connected to the incumbent LEC's loop plant at the NID. In order to provide service, a competitor must have access to this facility. Therefore, we conclude that a requesting carrier is entitled to connect its loops, via its own NID, to the incumbent LEC's NID.[853]

393. Pursuant to section 251(c)(3), we find that this arrangement clearly is technically feasible. Ameritech notes that it currently maintains such connections with competitors that have deployed their own loop facilities.[854] This is persuasive evidence that unbundled access at the NID, in this manner, does not raise network reliability concerns. Under section 251(d)(2)(A), the record contains no evidence of proprietary concerns with unbundled access to the NID. In addition, under our interpretation of the "impair" test of section 251(d)(2)(B), commenters do not contend that new entrants could obtain the same functionality at the same cost and service quality through other network elements of the incumbent LEC. Moreover, the record indicates that certain network architectures used by new entrants, such as fiber rings, can most efficiently connect end users to the new entrant's switching

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[853] We emphasize that access to inside wiring through the incumbent LEC's NID does not entitle a competitor to deliver its loop facilities into a building without the permission of the building owner. Similarly, access to an incumbent LEC's NID does not entitle the competitor to the riser and lateral cables between the NID and individual units within the building, which may be owned or controlled, for example, by the premises owner.

[854] Letter from James K. Smith, Director-Federal Relations, Ameritech, to William F. Caton, Acting Secretary, FCC, July 15, 1996 (Ameritech July 15 *Ex Parte*).

office without use of the incumbent LEC's facilities.[855] Thus, we conclude that the unavailability of access to incumbent LECs' NIDs would impair the ability of carriers deploying their own loops to provide service. Further, we believe that unbundled access to the NID will facilitate entry strategies premised on the deployment of loops. As discussed in section VII, above, the new entrant bears the costs connecting its NID to the incumbent LEC's NID.

394. We do not require an incumbent LEC to permit a new entrant to connect its loops directly to the incumbent LEC's NID. MCI contends that directly connecting its loops to incumbent LECs' NIDs is "[t]he only practical solution" for gaining access to inside wiring.[856] According to MCI, there is no extra wiring to connect the incumbent LEC's NID to the new entrant's NID.[857] Ameritech demonstrates, however, that it currently provides access to inside wiring through the type of arrangement that MCI asserts is not practical -- that is, by connecting a new entrant's loops to inside wiring via the new entrant's NID and Ameritech's NID. MCI does not demonstrate that its ability to provide competing service is unreasonably limited by the arrangements explained by Ameritech.

395. The record contains conflicting evidence on the technical feasibility of requiring incumbent LECs to permit competitors to connect their loops directly to incumbent LECs' NIDs. Ameritech asserts that such a direct connection would leave Ameritech's unused loops without overvoltage

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[855] Letter from Don Sussman, MCI, to William F. Caton, FCC, July 12, 1996 (MCI July 12 *Ex Parte*).

[856] MCI July 12 *Ex Parte* at 6.

[857] *Id.* at 5.

protection.[858] MCI argues that overvoltage protection is provided through the incumbent LEC's "protector module" that is separate from the NID.[859] Ameritech responds that its NIDs are integrated units providing both overvoltage protection and a demarcation point, and that these two functions of the NID are "inseverable."[860] AT&T contends direct access to incumbent LECs NIDs is technically feasible. According to AT&T, if a competitor connects its loops directly to the incumbent LEC's NID, the incumbent LEC's loops remain connected to the grounding equipment that protects against overvoltage.[861] According to AT&T, when the competitor does not use spare terminals on the NID, the competitor would be required to ground the incumbent LEC's unused loops to protect against overvoltage.[862]

396. We find that the record in this proceeding does not permit a determination on the technical feasibility of the direct connection of a competitor's loops to the incumbent LEC's NID. Our requirement of a NID-to-NID connection addresses the most critical need of competitors that deploy their own loops -- obtaining access to the inside wiring of the building.

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[858] Ameritech July 15 *Ex Parte* at 5.

[859] Letter from Donald Evans, Vice President - Federal Regulatory Affairs, MCI, to William F. Caton, Secretary, FCC, July 16, 1995 (MCI July 16 *Ex Parte*).

[860] Letter from James Smith, Director-Federal Relations, Ameritech, to William F. Caton, Acting Secretary, FCC, July 24, 1996 (Ameritech July 24 *Ex Parte*).

[861] Letter from Bruce Cox, Government Affairs Director, AT&T, to William F. Caton, Acting Secretary, FCC, July 18, 1996 (AT&T July 18 *Ex Parte*).

[862] *Id.*

We recognize, however, that competitors may benefit by directly connecting their loops to the incumbent LEC's NID, for example, by avoiding the cost of deploying NIDs.[863] States should determine whether direct connection to the NID can be achieved in a technically feasible manner in the context of specific requests by competitors for direct access to incumbent LECs' NIDs.[864]

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412. We define the local switching element to encompass line-side and trunk- side facilities plus the features, functions, and capabilities of the switch.[912] The line-side facilities include the connection between a loop termination at, for example, a main distribution frame (MDF), and a switch line card.[913] Trunk-side facilities include the connection between, for

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[863] *Id.* at 1.

[864] Ameritech July 15 *Ex Parte* at 5-6.

[912] The NPRM used the terms "switch platform" and "port," as they had been developed by the Illinois and New York Commissions, respectively, to describe two possible approaches to establishing an unbundled local switching element. Parties commenting on the unbundled switching element attributed a variety of functionalities to each of these terms. To avoid confusion, we will not use these terms in discussing the unbundled local switching element. Instead, we will address commenters' proposals according to the functionality that they recommend be included in the definition of an unbundled local switching element.

[913] A line card is a plug-in electronic printed circuit card that operates ringing, holding, and other features associated with one or several telephone lines.

example, trunk termination at a trunk-side cross-connect panel and a trunk card. The "features, functions, and capabilities" of the local switch include the basic switching function of connecting lines to lines, lines to trunks, trunks to lines, trunks to trunks. It also includes the same basic capabilities that are available to the incumbent LEC's customers, such as a telephone number, directory listing, dial tone, signaling, and access to 911, operator services, and directory assistance.[914] In addition, the local switching element includes all vertical features that the switch is capable of providing, including custom calling, CLASS features, and Centrex, as well as any technically feasible customized routing functions. Thus, when a requesting carrier purchases the unbundled local switching element, it obtains all switching features in a single element on a per-line basis. A requesting carrier will deploy individual vertical features on its customers' lines by designating, via an electronic ordering interface, which features the incumbent LEC is to activate for particular customer lines.

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[914] Purchasing the local switching element does not entitle a requesting carrier to connect its own AIN call processing database to the incumbent LEC's switch, either directly or via the incumbent LEC's signal transfer point or database. Section V.I.4, which discusses the unbundling of incumbent LECs' signaling systems and databases. We also note that E911 and operator services are further unbundled from local switching. *See infra* Section V.I.6.

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VII. PRICING OF INTERCONNECTION AND UNBUNDLED ELEMENTS

A. Overview

618. The prices of interconnection and unbundled elements, along with prices of resale and transport and termination, are critical terms and conditions of any interconnection agreement. If carriers can agree on such prices voluntarily without government intervention, these agreements will be submitted directly to the states for approval under section 252. To the extent that the carriers, in voluntary negotiations, cannot determine the prices, state commissions will have to set those prices. The price levels set by state commissions will determine whether the 1996 Act is implemented in a manner that is *pro-competitor* and favors one party (whether favoring incumbents or entrants) or, as we believe Congress intended, *pro-competition*. As discussed more fully in Section II.D. above, it is therefore critical to implementing Congress's pro-competitive, de-regulatory national policy framework to establish among the states a common, pro-competition understanding of the pricing standards for interconnection and unbundled elements, resale, and transport and termination. While such a common interpretation might eventually emerge through judicial review of state arbitration decisions, we believe that such a process could delay competition for years and require carriers to incur

substantial legal costs.[1490] We therefore conclude that, to expedite the development of fair and efficient competition, we must set forth rules now establishing this common, pro-competition understanding of the 1996 Act's pricing standards. Accordingly, the rules we adopt today set forth the methodological principles for states to use in setting prices. This section addresses interconnection and unbundled elements, and subsequent sections address resale and transport and termination, respectively.

619. While every state should, to the maximum extent feasible, immediately apply the pricing methodology for interconnection and unbundled elements that we set forth below, we recognize that not every state will have the resources to implement this pricing methodology immediately in the arbitrations that will need to be decided this fall. Therefore, so that competition is not impaired in the interim, we establish default proxies that a state commission shall use to resolve arbitrations in the period before it applies the pricing methodology. In most cases, these default proxies for unbundled elements and interconnection are ceilings, and states may select lower prices. In one instance, the default proxy we establish is a price range. Once a state sets prices according to an economic cost study conducted pursuant to the cost-based pricing methodology we outline, the defaults cease to apply. In setting a rate pursuant to the cost-based pricing methodology, and especially when setting a rate above a default proxy ceiling or outside the default proxy range, the state must give full and fair effect to the economic costing methodology we set forth in this Order and must create a factual record, including the cost study, sufficient for purposes of review after notice and opportunity for the affected parties to participate.

[1490] For a discussion of our legal authority to adopt national pricing rules, *see supra*, Section II.D.

620. In the following sections, we first set forth generally, based on the current record, a cost-based pricing methodology based on forward-looking economic costs, which we conclude is the approach for setting prices that best furthers the goals of the 1996 Act. In dynamic competitive markets, firms take action based not on embedded costs, but on the relationship between market- determined prices and forward-looking economic costs. If market prices exceed forward-looking economic costs, new competitors will enter the market. If their forward-looking economic costs exceed market prices, new competitors will not enter the market and existing competitors may decide to leave. Prices for unbundled elements under section 251 must be based on cost under the law, and that should be read as requiring that prices be based on forward-looking economic costs. New entrants should make their decisions whether to purchase unbundled elements or to build their own facilities based on the relative economic costs of these options. By contrast, because the cost of building an element is based on forward-looking economic costs, new entrants' investment decisions would be distorted if the price of unbundled elements were based on embedded costs. In arbitrations of interconnection arrangements, or in rulemakings the results of which will be applied in arbitrations, states must set prices for interconnection and unbundled network elements based on the forward-looking, long-run, incremental cost methodology we describe below. Using this methodology, states may not set prices lower than the forward- looking incremental costs directly attributable to provision of a given element. They may set prices to permit recovery of a reasonable share of forward-looking joint and common costs of network

elements.[1491] In the aftermath of the arbitrations and relying on the state experience, we will continue to review this costing methodology, and issue additional guidance as necessary.

621. We reject various arguments raised by parties regarding the recovery of costs other than forward-looking economic costs in section 251(c)(2) and (c)(3) prices, including the possible recovery of: (1) embedded or accounting costs in excess of economic costs; (2) incumbent LECs' opportunity costs; (3) universal service subsidies; and (4) access charges. As discussed in Section VII.B.2.a. below, certain portions of access charges may continue to be collected for an interim period in addition to section 251(c)(3) prices.

622. With respect to prices developed under the forward-looking, cost-based pricing methodology, we conclude that incumbent LECs' rates for interconnection and unbundled elements must recover costs in a manner that reflects the way they are incurred. We adopt certain rules that states must follow in setting rates in arbitrations. These rules are designed to ensure the efficient cost- based rates required by the 1996 Act.

623. In the next section of the Order, we establish default proxies that states may elect to use prior to utilizing an economic study and developing prices using the cost-based pricing methodology. We recognize that certain states may find it difficult to apply an economic costing methodology within the statutory time frame for arbitrating interconnection disputes. We therefore set forth default proxies that will be relatively easy to apply on an interim basis to interconnection arrangements. We discuss with respect to particular unbundled elements the reasonable rate structure for those elements and

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[1491] We define these and other forward-looking cost concepts *infra*, Section VII.B.2.a. We define what we consider to be a reasonable share of forward- looking joint and common costs *infra*, Section VII.B.2.a.

the particular default proxies we are establishing for use pending our adoption of a generic forward-looking cost model. Finally, we discuss the following additional matters: generic forward-looking costing models that we intend to examine further by the first quarter of 1997 in order to determine whether any of those models, with modifications, could serve as better default proxies; the future adjustment of rates; the relationship of unbundled element prices to retail prices; and the meaning of the statutory prohibition against discrimination in sections 251 and 252.

624. Those states that have already established methodologies for setting interconnection and unbundled rates must review those methodologies against the rules we are adopting in this Order. To the extent a state's methodology is consistent with the approach we set forth herein, the state may apply that methodology in any section 252 arbitration. However, if a state's methodology is not consistent with the rules we adopt today, the state must modify its approach. We invite any state uncertain about whether its approach complies with this Order to seek a declaratory ruling from the Commission.

B. Cost-Based Pricing Methodology

625. As discussed more fully in Section II.D. above, although the states have the crucial role of setting specific rates in arbitrations, the Commission must establish a set of national pricing principles in order to implement Congress's national policy framework. For the reasons set forth in the preceding section and as more fully explained below, we are adopting a cost-based methodology for states to follow in setting interconnection and unbundled element rates. In setting forth the cost-based pricing methodology for interconnection and access to unbundled elements, there are three basic sets of

questions that must be addressed. First, does the 1996 Act require that the same standard apply to the pricing of interconnection provided pursuant to section 251(c)(2), and unbundled elements provided pursuant to section 251(c)(3)? Second, what is the appropriate methodology for establishing the price levels for interconnection and for each unbundled element, how should costs be defined, and is the price based on economic costs, embedded costs, or other costs? Third, what are the appropriate rate structures to be used to set prices designed to recover costs, including a reasonable profit? We address each of these questions in the following sections.

1. Application of the Statutory Pricing Standard

a. Background

626. In the NPRM, we proposed that any pricing principles we adopt should be the same for interconnection and unbundled network elements because sections 251(c)(2) and (c)(3) and 252(d)(1) use the same pricing standard.[1492] We invited parties to comment on this issue and to justify any proposed distinction in the priority for interconnection and unbundled network elements. We also stated our belief that the same pricing rules that apply to interconnection and unbundled network elements should also apply to collocation under section 251(c)(6) of the 1996 Act.

b. Comments

627. Commenters generally agree that any pricing rules adopted by the Commission for interconnection and

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[1492] NPRM at para. 122.

unbundled elements should be the same.[1493] These parties assert that any pricing rules the Commission ultimately adopts should not, therefore, create incentives to substitute or arbitrage one type of classification for another. Commenters also generally agree that the pricing rules the Commission adopts for interconnection and unbundled elements should also apply to collocation.[1494] Many of these parties agree that collocation is a subset of the interconnection arrangements contemplated by sections 251(c)(2) and 252(d)(1).[1495] On the other hand, a few parties contend that the pricing standards contained in section 252(d)(1) for interconnection and unbundled elements do not apply to collocation provided under section 251(c)(6).[1496] BellSouth argues that the Commission should not adopt any national standards for virtual collocation.[1497] Other commenters, including some that oppose the establishment of pricing rules by the Commission, argue that, to the extent that the Commission adopts national standards for collocation, they should generally follow those established in the Commission's

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[1493] *See, e.g.*, Citizens Utilities comments at 16 n.14; Ohio Commission comments at 42; Teleport comments at 46.

[1494] *E.g.*, ACSI comments at 16; ALTS comments at 34-35; Citizens Utilities comments at 16 n.14; Colorado Commission comments at 34; MCI comments at 54, 61; MFS comments at 30; NEXTLINK comments at 26; PacTel comments at 63; Sprint comments at 42; Teleport comments at 46.

[1495] *See, e.g.*, Citizens Utilities comments at 16 n.14; Colorado Commission comments at 34; MFS comments at 30; NEXTLINK comments at 26.

[1496] *See, e.g.*, SNET comments at 24 n

[1497] BellSouth comments at 23.

Expanded Interconnection proceeding in CC Docket No. 91-141.[1498]

c. Discussion

628. Sections 251(c)(2) and (c)(3) impose an identical duty on incumbent LECs to provide interconnection and access to network elements "on rates, terms, and conditions that are just, reasonable, and nondiscriminatory."[1499] In addition, both interconnection and unbundled network elements are made subject to the same pricing standard in section 252(d)(1). Based on the plain language of sections 251(c)(2), (c)(3), and section 252(d)(1), we conclude that Congress intended to apply the same pricing rules to interconnection and unbundled network elements. The pricing rules we adopt shall, therefore, apply to both.

629. We further conclude that, because section 251(c)(6) requires that incumbent LECs provide physical collocation on "rates, terms, and conditions that are just, reasonable, and nondiscriminatory," which is identical to the standard for interconnection and unbundled elements in sections 251(c)(2) and (c)(3), collocation should be subject to the same pricing rules.[1500] We also note that, because collocation is a method of obtaining interconnection and access to unbundled network elements, collocation is properly treated under the same pricing rules. This legal conclusion that there should be a single set of pricing rules for interconnection, unbundled network elements, and collocation provides greater consistency and guidance to the industry, regulators, and the courts.

[1498] *See, e.g.*, Bell Atlantic comments at 32-34.

[1499] 47 U.S.C. § 251(c)(2), (c)(3).

[1500] *See supra*, Section VI.B.

Moreover, it reduces the regulatory burdens on state commissions of developing and applying different pricing rules for collocation, interconnection, and unbundled network elements. We note that our adoption of this single set of pricing rules should minimize regulatory burdens, conflicts, and uncertainties associated with multiple, and possibly inconsistent rules, thus facilitating competition on a reasonable and efficient basis minimizing the economic impact of our rules for all parties, including small entities and small incumbent LECs.[1501]

2. Rate Levels

a. Pricing Based on Economic Cost

(1) Background

630. We observed in the NPRM that economists generally agree that prices based on forward-looking long-run incremental costs (LRIC) give appropriate signals to producers and consumers and ensure efficient entry and utilization of the telecommunications infrastructure.[1502] We noted, however, that there was a lack of general agreement on the specifics of methodology for deriving prices based on LRIC or total service long-run incremental cost (TSLRIC). We invited parties to comment on whether we should require the states to employ a LRIC-based pricing methodology and to explain with specificity the costing methodology they support.[1503] We recognized, however, that prices based on LRIC might not permit recovery of forward-looking costs if there were significant forward-looking joint and common costs among

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[1501] *See* Regulatory Flexibility Act, 5 U.S.C. §§ 601 *et seq.*

[1502] NPRM at para. 124.

[1503] *Id.* at para. 126.

network elements.[1504] We sought comment on how, if rates are set above incremental cost, to deal with the problems inherent in allocating common costs and any other overheads.[1505] We observed that, by defining the unbundled elements at a sufficiently aggregated level, it may be possible to reduce the costs to be allocated as joint and common by identifying a substantial portion of costs as incremental to a particular element. To the extent that joint and common costs cannot be entirely eliminated, we sought comment on various methodologies for assigning them, including the use of a fixed allocator or on the basis of inverse demand elasticity. We also sought comment on whether, regardless of the method of allocating common costs, we should limit rates to levels that do not exceed stand-alone costs.[1506] Finally, we invited parties to comment on whether a LRIC-based methodology would establish a price for interconnection and unbundled network elements that includes a reasonable profit and thus complies with section 252(d)(1).[1507]

631. A number of states already employ, or have plans to utilize, some form of LRIC or TSLRIC methodology in their approach to setting prices for unbundled network elements,[1508] with several states choosing LRIC or TSLRIC as

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[1504] *Id.* at para. 129.

[1505] *Id.* at para. 130.

[1506] *Id.* For a definition of stand-alone costs, *see* Section VII.B.2.a. *infra*.

[1507] 47 U.S.C. § 252(d)(1)(A)(i); NPRM at para. 129.

[1508] *See, e.g.*, California Commission comments at 29 (California has adopted TSLRIC as the standard for developing the costs of unbundled elements and in a rulemaking this summer will determine the unbundled

(continued...)

a price floor.[1509] For instance, the Connecticut Commission adopted a TSLRIC methodology to measure the cost of service of SNET, its principal incumbent LEC.[1510] Arizona also requires incumbent LECs to conduct TSLRIC cost studies to establish the underlying cost of unbundled services and facilities.[1511] The Ohio Commission has adopted Long Run Service Incremental Cost ("LRSIC"), which is closely related

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[1508] (...continued)
network elements and what level of shared and common costs should be included in the price of each); Michigan Commission comments at 13 (1996 prices for loops to remain at levels established by the Michigan Commission .n its original interconnection order or at TSLRIC); Texas Commission comments at 22 (Texas Commission has employed LRIC-based pricing methodologies for many years; SWBT and GTE required to file LRIC cost studies to be used in pricing not later than November 1, 1996).

[1509] *See, e.g.*, Colorado Commission comments at Attachment (Rules Prescribing Principles for Costing and Pricing of Regulated Services of Telecommunications Service Providers) 4 CCR 723-30, Rules 4-5; Hawaii Administrative Rules, Sections 6-80-32-34 (setting out a three-tiered pricing regime with TSLRIC set as floor for pricing of competitive services); Louisiana Commission comments at Attachment (Louisiana Public Service Commission "Regulations for Competition in the Local Telecommunications Market"), p.30; Washington Commission comments at 25, Appendix B (*Washington Utilities and Transportation Commission v. U S West Communications*, Docket No. UT-950200 at 82 (Washington Commission, April 11, 1996)); Wisconsin Stat. Ann. section 196.204 (requiring the price of each network service or function to exceed TSLRIC).

[1510] Connecticut Commission comments at 4.

[1511] Arizona Commission comments, Exhibit V (Arizona Administrative Code R14-2-1101 *et seq.*), p. 10.

to TSLRIC.[1512] The Missouri and Wyoming Commissions are among a number of state commissions that have not yet adopted a pricing methodology, but are considering LRIC or TSLRIC.[1513] Oklahoma law provides for submission of LRIC cost studies and studies identifying a contribution to common costs for interconnection of facilities and access to network elements to the Oklahoma Commission during an arbitration.[1514] A number of states have yet to choose a pricing methodology. For instance, the New York Commission sets prices on a case-by- case basis.[1515] Unbundled element prices also exist in several states pursuant to negotiated interconnection agreements that have either already been approved by state commissions or are under consideration.[1516]

[1512] *See* Ohio Commission comments at 43-45.

[1513] *See, e.g.*, Missouri Commission comments at 11 (supports LRIC for costing; LRIC is defined in pending state legislation); Wyoming Commission comments at 26-27 (draft rules propose use of TSLRIC as a price floor, with prices to include a contribution to shared, common, and joint costs, and the sum of prices for unbundled elements not to exceed retail for bundled services; incumbent LECs shall impute the prices of unbundled elements into the price floors of each of their own services that utilize the network elements).

[1514] Oklahoma Commission comments at Appendix A (Corporation Commission Telephone Rules OAC 165:55-17-25), pp. 10-11.

[1515] *Competition, The State Experience* at 80 (compilation of written responses by state commission staffs to questions by FCC staff, compiled by NARUC) (March 8, 1996).

[1516] According to information in our possession, such agreements have been negotiated in, among other states, Alabama, Florida, Georgia, Kentucky, Illinois, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee. Letter from W.W. Jordan, Executive Director-- Federal

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632. Section 252(d)(1) requires, *inter alia*, that rates for interconnection and unbundled network elements be based on "cost (determined without reference to a rate-of-return or other rate-based proceeding)."[1517] We tentatively concluded in the NPRM that this language precludes states from setting rates by use of traditional cost-of service regulation, with its detailed examination of historical carrier investment and expenses.[1518] Instead, we indicated our belief that the statute contemplates the use of other forms of cost-based price regulation, such as the setting of prices based on forward-looking economic cost methodologies (such as LRIC) that do not involve the use of an embedded rate base. We sought comment on whether section 252(d)(1) forecloses consideration of historical or embedded costs or merely prohibits state commissions from conducting a traditional rate-of-return proceeding to establish prices for interconnection and unbundled network elements. Embedded costs are the costs that the incumbent LECs carry on their accounting books that reflect historical purchase prices, regulatory depreciation rates, system configurations, and operating procedures. We invited parties to comment on

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[1516] (...continued)
Regulatory, BellSouth, to William F. Caton, Acting Secretary, July 11, 1996 at Attachment (containing chart detailing agreements between BellSouth and new entrants in Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, and Tennessee); "Interconnection Agreement Under Sections 251 and 252 of the telecommunications Act of 1996, by and between, Ameritech Information Industry Services and MFS Intelenet of Illinois, Inc.," dated May 17, 1996 filed July 25, 1996).

[1517] 47 U.S.C. § 252(d)(1)(B).

[1518] NPRM at para. 123.

whether incumbent LECs should be permitted to recover some portion of their historical or embedded costs over TSLRIC.[1519]

633. In the NPRM, we noted that certain incumbent LECs had advocated that interconnection and access to unbundled element prices be based on the "efficient component pricing rule" (ECPR).[1520] Under this approach, an incumbent LEC that sells an essential input element, such as interconnection, to a competing network would set the price of that input element equal to "the input'sdirect per-unit incremental costs plus the opportunity cost to the input supplier of the sale of a unit of input."[1521] We tentatively concluded in the NPRM that ECPR or equivalent methodologies are inconsistent with the section 252(d)(1) requirement that rates be based on "cost," and we proposed to preclude the states from using this methodology.[1522]

634. Section 254 requires the Commission and the Joint Board established thereunder to ensure that "[a]ll providers of telecommunications service ... make an equitable and nondiscriminatory contribution to the preservation and advancement of universal service ... ." That section further provides that "[t]here should be specific, predictable, and sufficient Federal and State mechanisms to preserve and

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[1519] *Id.* at para. 129.

[1520] *Id.* at para. 147. *See* William J. Baumol, *Some Subtle Issues in Railroad Deregulation*, 10 Int'l J. Trans. Econ. 341 (1983); William Baumol & Gregory Sidak, *Toward Competition in Local Telephony* (1994); William Baumol & Gregory Sidak, *The Pricing of Inputs Sold to Competitors*, 11 Yale J. on Reg. 171 (1994).

[1521] William Baumol & Gregory Sidak, *The Price of Inputs Sold to Competitors*, 11 Yale J. on Reg. 171, 178.

[1522] NPRM at para. 148.

advance universal service."[1523] The Conference Committee also explained that these provisions require any such universal service support payment to be, to the extent possible, "explicit, rather than implicit as many support mechanisms are today."[1524] In the NPRM, we sought comment on whether "it would be consistent with sections 251(d)(1) and 254 for states to include any universal service costs or subsidies in the rates they set for interconnection, collocation, and unbundled network elements."[1525] In particular, we discussed the "play or pay" system adopted by the state of New York in which interconnectors that agree to serve all customers in their self-defined service areas ("players") potentially pay a substantially lower interconnection rate than those that serve only selected customers ("payers") and are, therefore, liable to pay additional contribution charges.[1526] We noted that the statutory schedule for the completion of the universal service reform proceeding (15 months from the enactment of the 1996 Act) is different from that for this proceeding (6 months from the date of enactment of the 1996 Act). We asked whether the ability of states to take universal service support into account differs pending completion of the section 254 Joint Board proceeding or state universal service proceedings, pursuant to section

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[1523] 47 U.S.C. § 254(b)(4) and (b)(5).

[1524] Joint Explanatory Statement at 130-31. "In keeping with the conferees' intent that universal service support should be clearly identified, [section 254(e)] states that such support should be made explicit." *Id.* at 131; *See also* 47 U.S.C. § 254(e).

[1525] NPRM at para. 145.

[1526] *Id.*

254(f), during any transition period that may be established in the section 254 proceeding or thereafter.[1527]

(2) Comments

635. *Forward-Looking Costs.* Most new entrants and IXCs agree that prices for interconnection and unbundled elements should be based on forward-looking, economic costs.[1528] Many state commissions also argue that, if federal pricing rules are adopted, forward-looking methodologies should serve as the basis for establishing rates in a competitive environment.[1529] The Department of Justice contends that pricing above forward-looking economic costs would subject competitors to substantial risk of a price squeeze because the real cost of a network element for the incumbent LEC will be its forward- looking economic cost, while the cost to the new entrant will be the higher price charged for the element by the LEC.[1530] Parties favoring a forward- looking, incremental cost methodology argue that it is the appropriate pricing standard for

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[1527] *Id.*

[1528] *See, e.g.*, ACSI comments at 54-55; AT&T comments at 47; Jones Intercable comments at 25-26; LDDS comments at 60; MCI comments at 59, 61; NEXTLINK comments at 27; Sprint comments at 43-44; Teleport comments at 46; Telecommunications Resellers Ass'n comments 38-39; *See also* Ad Hoc Telecommunications Users Committee comments at 31-34; DoJ comments at 27-32; Frontier comments at 21-22; Texas Public Utility Counsel comments at 33-34; Attorneys General reply at 3; NCTA reply at 18-20; NTIA reply at 17-18 n.35.

[1529] *See, e.g.*, New York Commission comments at 3-4; Missouri Commission comments at 11; Kentucky Commission comments at 4-5; Wyoming Commission comments at 27-28; Ohio Commission comments at 41-43.

[1530] DoJ comments at 28-31.

several reasons. First, such an approach simulates the prices for network elements that would result if there were a competitive market for the provision of such elements to other carriers.[1531] In such a market, these parties argue, competition would drive prices to forward-looking costs, even if such costs were lower than a firm's historical costs.[1532] Second, unbundled element prices based on forward-looking economic costs prevent incumbent LECs from exploiting their market power at the expense of their competitors that are dependent on the incumbent LEC's facilities.[1533] Third, a forward-looking incremental cost methodology creates the right investment incentives for competitive facilities-based entry and creates incentives for the market to move towards competition while preserving opportunities for competition even if some network elements prove to be resistant to competition.[1534] Fourth, a pricing methodology based on forward-looking economic costs minimizes the incumbent LECs' opportunities to engage in anticompetitive cross-subsidization that could delay the emergence of effective competition.[1535] Finally, these parties

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[1531] *See, e.g.*, DoJ comments at 28-29.

[1532] *See, e.g.*, AT&T comments at Appendix C (Affidavit of William J. Baumol, Janusz A. Ordover, and Robert D. Willig), p.5; DoJ comments at 28-29.

[1533] *See, e.g.*, DoJ comments at 30.

[1534] *See, e.g.*, AT&T comments at Appendix C (Affidavit of William J. Baumol, Janusz A. Ordover, and Robert D. Willig), p.7; DoJ comments at 29; NCTA comments at Appendix B (Unbundling, Interconnection, and Traffic Exchange: The Pricing of Access to Local Exchange Networks), p. 22.

[1535] *See, e.g.*, DoJ comments at 30-31.

argue that pricing based on forward-looking economic costs will lead to lower prices for consumers.[1536]

636. While many commenters agree that the proper economic cost standard for interconnection and unbundled elements is one based on forward-looking LRIC, the record indicates a lack of consensus on the precise definition of such a methodology. While many parties, including some incumbent LECs, favor a pricing methodology based on TSLRIC,[1537] others contend that LRIC provides the appropriate basis for pricing interconnection and unbundled elements.[1538] AT&T argues that, because incumbent LECs will be providing access to unbundled network elements and interconnection, and not merely the individual services that use those elements, the relevant question is the incumbent LEC's cost of producing the

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[1536] *See, e.g.*, DoJ comments at 28-31.

[1537] *See, e.g.*, Ad Hoc Telecommunications Users Committee comments at 34-36; AT&T comments at 47-48; ALTS comments at 35-36; Ameritech comments at 63-64 (but must include recovery of joint, common, and residual costs); CFA/CU comments at 26-32 (including a contribution to joint and common costs); Citizens Utilities comments at 18; Comcast comments at 23; CompTel comments at 67-71; Competition Policy Institute comments at 8; DoJ comments at 28-31 (including any joint and common costs); Frontier comments at 21-22; Intermedia comments at 14; LDDS comments at 56, 62; MCI comments at 60-61; NCTA comments at 49-50; Ohio Consumers' Counsel comments at 24-25 (including a markup over TSLRIC to reflect a reasonable allocation of joint and common costs); SNET reply at 5-7 (including a reasonable contribution to common costs); Sprint comments at 44 (plus a reasonable contribution to joint and common costs), reply at 28-32; TCC comments at 14.

[1538] *See, e.g.*, Texas Statewide Tel. Cooperative comments at 8-11, 14.

entire demand for network elements.[1539] Because TSLRIC defines a cost increment relative to a hypothetical situation in which the supplier does not currently provide the network element at all and thus must construct and operate all element-specific facilities necessary to produce the network element, AT&T believes that TSLRIC, unlike LRIC, includes all element-specific fixed costs.[1540]

637. The Consumer Federation of America argues that costs must be analyzed consistently across all major services using the same cost methodology, *i.e.*, individual functionalities or specific capacities must have similar costs across services.[1541] AT&T argues that TSLRIC should exclude all costs attributable to the incumbent LECs' retailing operations, and that all other cost allocations should be competitively-neutral and assigned on an equally proportional basis relative to attributable costs.[1542] ALTS argues that the underlying data from a TSLRIC study should be accessible for purposes of replicating the study methods and comparisons to other public data.[1543] NTIA contends that the Commission should require the states to consider recovery of only those costs that the incumbent can convincingly demonstrate are

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[1539] AT&T comments at 47, Appendix C (Affidavit of William J. Baumol, Janusz A. Ordover, and Robert D. Willig), pp.6.

[1540] *Id.* at 48.

[1541] CFA/CU comments at 32.

[1542] AT&T comments at 61-62, 64-65.

[1543] ALTS comments at 36-37.

incurred in service provisioning.[1544] Supporters of a forward-looking economic cost methodology argue that TSLRIC studies can be prepared quickly to establish interconnection and unbundled element prices.[1545]

638. Incumbent LECs generally oppose the adoption of a forward-looking, long- run incremental costing methodology.[1546] At least five major reasons are offered in opposition. First, opponents of a forward-looking, long-run incremental costing methodology argue that setting the price of each discrete service based on LRIC will not recover the total costs of the network because if prices are set equal to the cost of the last unit, total revenues will fall short of total costs.[1547] Second, PacTel argues that a forward-looking cost methodology also suffers from the "fallacy of perfect competition" because it does not account for the fact that, while it is true that competition drives the price of every product toward incremental cost, every multi-product firm must have some products priced far enough above incremental cost to recover its total costs and return a profit to investors.[1548] Third, incumbent LECs argue that setting prices based on the forward-looking economic cost of the element will not create incentives for new

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[1544] NTIA reply at 28.

[1545] *See, e.g.*, LDDS comments at 64-65.

[1546] *See, e.g.*, Matanuska comments at 3-4; NYNEX comments at 46-47; PacTel comments at 66-67; TCA comments at 8.

[1547] *See, e.g.*, Bell Atlantic comments at Attachment 1 (Affidavit of Jerry A. Hausman), pp.3-4; NECA comments at 8; Rural Tel. Coalition comments at 25.

[1548] PacTel comments at 68-69; *see also* Rural Tel. Coalition reply at 26-27.

entrants to build their own facilities,[1549] and will discourage efficient entry and useful investment by both incumbent LECs and their competitors.[1550] Fourth, some opponents of a forward-looking, economic cost methodology contend that such an approach raises significant practical and administrative problems because LRIC studies are expensive to conduct, almost impossible to audit or review particularly for small entities seeking to enter the local exchange market, highly subjective, and the necessary data are under the exclusive control of the party subject to the agreement.[1551] USTA and other commenters also argue that use of LRIC cost studies would fail to capture differences in geographic regions, thereby denying small incumbent LECs a reasonable opportunity to recover their costs.[1552] Finally, many opponents of a forward-looking, economic cost approach to pricing interconnection and access to unbundled elements argue also that such a methodology precludes any contribution to joint and common costs and does not allow the recovery of historical costs.[1553]

[1549] *See, e.g.*, Bell Atlantic comments at 38; SBC comments at 91-92.

[1550] *See, e.g.*, PacTel comments at 70; SBC comments at 90-92; *see also* U S West comments at Exhibit A (Federal Implementation of the Telecommunications Act of 1996: Competition in the Local Exchange), p.9.

[1551] *See, e.g.*, Bell Atlantic comments at Attachment 2 (Declaration of Robert W. Crandall), p.8; MFS comments at 54, reply at 11-12; NECA comments at 8.

[1552] *E.g.*, USTA comments at 45-50; Bay Springs reply at 8.

[1553] *See, e.g.*, BellSouth comments at 56-57; NYNEX comments at 50-52; PacTel comments at 65-66; SBC comments at 88, reply at 24-25; U S West reply at 9, 12 (stating that depreciation expenses should be properly allocated); *see also* NECA comments at 8; TCA comments at 8-9. For a

(continued...)

These parties contend that network providers must be permitted to recover their total costs of service, including a return on investment and a reasonable allocation of joint, common, and historical costs.[1554]

639. Incumbent LECs generally contend that costs should be based on the individual incumbent LEC's existing network design and technology instead of the idealized least-cost, most efficient network design and technology.[1555] USTA argues that, if competitors want to use an incumbent LEC's embedded plant, competitors should pay for the existing plant, not some theoretical, more efficient plant.[1556] In addition, these parties argue that, if a new entrant can purchase the unbundled element from the incumbent LEC at a price no higher than the cost of the least-cost, most efficient provider, then the new entrant has little incentive to invest in its own facilities. Ameritech also contends that section 252(d)(1) addresses recovery of the incumbent LEC's costs of providing

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[1553] (...continued)
discussion of recovery of joint, common, and embedded costs, *see infra* Section VII.B.2.a.

[1554] *See, e.g.*, Ameritech comments at 60, reply at 30-33 (stating that residual cost recovery must also be permitted); Bell Atlantic comments at 35- 36 (stating that the recovery of the total costs of constructing and operating the networks must also be permitted); NYNEX comments at 42-44; USTA comments at Attachment 1 (Affidavit of Jerry A. Hausman), pp

[1555] *See, e.g.*, Ameritech reply at 32-33; Bell Atlantic reply at 17-18; Bellsouth reply at 36-37; *see also* GVNW comments at 36; USTA comments at 40, reply at 21-22.

[1556] USTA comments at 40.

interconnection and unbundled network elements, not the costs of a hypothetical carrier.[1557]

640. On the other hand, several new entrants argue that a forward-looking economic cost methodology should be based on an efficient provider's costs of producing a service.[1558] These parties contend that, in a competitive market, prices are determined by the cost of efficient potential entrants, not the embedded costs of existing firms.[1559] In addition, a pricing standard based on the costs of the element using the most-efficient technology prevents incumbent LECs from charging competitors for the cost of facilities that would in fact be used in large part by the incumbent LECs themselves to compete in new markets such as interexchange service.[1560] Sprint, however, argues that prices should be based on the incumbent LEC's average utilization and existing network design and technology, not on an idealized network and technology that

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[1557] Ameritech reply at 32.

[1558] *See, e.g.*, ACSI comments at 56; AT&T comments at 57-60 (optimally configured and sized assets with current technology and efficient operating practices); AT&T comments at Appendix C (Affidavit of William J. Baumol, Janusz A. Ordover, and Robert D. Willig), p. 10 (efficient, cost-minimizing competitor); GST comments at 26-27 (costs of an efficient LEC rather than the actual costs of an incumbent LEC); Teleport reply at 30 (best available technology at today's prices); *see also* DoJ reply at 9-11 (best generally available technology); Louisiana Commission comments at 4, 15; Telecommunications Resellers Ass'n comments at 38 (most efficient available technology).

[1559] *See, e.g.*, TCC comments at 17.

[1560] DoJ reply at 10.

may bear no relationship to the incumbent LECs existing operations.[1561]

641. USTA, Bell Atlantic, and BellSouth have asserted in various filings and *ex parte* presentations that TSLRIC-based pricing would not properly compensate incumbent LECs for certain factors that affect capital costs and economic depreciation rates.[1562] First, when technological progress lowers equipment costs, the replacement or forward-looking economic cost of certain durable sunk investments can be expected to decline over time. In this case the correct measure of cost over any period of time should include the expected decline in economic value during that period.[1563]

642. Second, these parties argue that, when investments in facilities needed to meet a specific level of demand are sunk and irreversible, an incumbent LEC may not be able to recover these costs over the physical life of the facility, because demand may decreaseas new entrants elect to build their own facilities. When entry is possible using current technology, either competition from these entrants, or rate regulation can prevent retail service prices from rising

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[1561] Sprint reply at 31-32.

[1562] USTA reply comments at Attachment 1 (Reply Affidavit of Jerry A. Hausman); Bell Atlantic comments at Attachment 1(Affidavit of Jerry A. Hausman); Letter from Robert T. Blau, Vice President, Executive and Federal Regulatory Affairs, BellSouth, to William F. Caton, ...ting Secretary, FCC, July 25, 1996, at Attachment (Response to Hubbard and Lehr).

[1563] We note that USTA seems to present a contradictory argument regarding the expected effect of this issue -- here Hausman claims that prices will decrease rapidly, whereas in our price cap proceeding, USTA sponsored testimony by Christenson that claimed input prices would generally increase at the rate of inflation. USTA comments in CC Docket No. 94-1, at 25-27.

significantly, which will place an effective ceiling on profits. If demand for a service falls in a market in which the incumbent LEC is the only supplier and owner of sunk facilities, however, there will be no corresponding exit of other carriers that will prevent prices and profits from falling. Because of this asymmetric effect of changing market conditions on an incumbent LEC's profits, these parties claim that increasing the uncertainty due to entry in the local exchange market will increase the cost of capital to the incumbent LEC. They then assert that the inability of TSLRIC to account for the risks associated with sunk facilities can lead to understating the true economic cost of an element by a factor of three.[1564] Finally they assert that empirical research that shows firms' hurdle rates in excess of the market cost of capital shows that the considerations of risk associated with sunk investment significantly raises a firm's cost of capital.[1565]

643. *Joint and Common Costs.* Several incumbent LECs contend that a forward- looking, economic cost methodology does not take into account either joint or common costs.[1566] Although a few parties contend that incumbent LECs do not need a mark-up over TSLRIC to recover joint and common costs because incumbents are presumably already

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[1564] *See* USTA reply at Attachment 1 (Reply Affidavit of Jerry A. Hausman), p.1.

[1565] *Id.* at 7.

[1566] *See, e.g.*, Bell Atlantic comments at Tab 2 (Declaration of Robert W. Crandall), p.9, reply at Attachment 1 (Declaration of Alfred E. Kahn and Timothy J. Tardiff), p.6; BellSouth comments at 51; Municipal Utilities comments at 19-21; SBC reply at 24-25; TDS comments at 18-19.

recovering these costs,[1567] commenters generally agree that incumbent LECs should be permitted to recover some measure of forward-looking joint and common costs.[1568] These commenters argue that pricing at incremental cost without joint and common costs is economically inefficient because it permits competitors to offer the incumbent LECs' services without making a contribution to the common costs that the LECs incur in offering the service.[1569] They further contend that excluding recovery of joint and common costs will distort technological decisions because the LEC is encouraged to invest in less efficient technologies that have higher incremental costs and lower common costs, which would tend to destroy economies of scope.[1570] Finally, incumbent LECs fear that they will be forced to increase retail rates to recover these unrecovered common costs, while their competitors that do not

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[1567] *See* Telecommunications Resellers Ass'n comments at 39-40; Texas Public Utility Counsel comments at 19-20; WinStar comments at 29, reply at 9-10.

[1568] *See, e.g.*, Ameritech comments at 60; Bell Atlantic comments at 36; Citizens Utilities comments at 19; Cincinnati Bell comments at 24-25; Colorado Commission comments 45-46; DoJ reply at 6; GTE Comments at 61-62; Kentucky Commission comments at 5; Lincoln Tel. comments at 13; Mass. Commission comments at 11-12; NCTA comments at 49-50; Ohio Consumers' Counsel comments at 24; SBC comments at 91; Sprint comments at 43-44; AT&T reply at 28; NTIA reply at 19-21; USTA reply at 19.

[1569] *E.g.*, BellSouth comments at 52-53; GTE comments at Attachment 3 (Affidavit of Edward C. Beauvais, Ph.D.), p.3.

[1570] *See, e.g.*, BellSouth comments at 53; Lincoln Tel. comments at 13.

face such costs will reduce their own prices and have little incentive to invest in facilities of their own.[1571]

644. There is no consensus in the record on the magnitude of the joint and common costs at stake. Although commenters argued that the amount of common costs varies dramatically due to differences in location, network construction, and equipment,[1572] several parties are skeptical that there are significant joint and common costs between network elements given the relative modularity of the network and associated functions.[1573] These parties contend that, if joint and common costs are incurred, incumbent LECs must quantify them so that a state commission can determine whether and precisely how much contribution is needed.[1574] The Department of Justice asserts that, when developing a TSLRIC for unbundled network elements, it is preferable, where possible, to focus on costs of facilities and network elements rather than services that use those facilities in order to arrive at a more accurate determination of economic costs and to reduce the amount of costs that must be treated as joint or common.[1575] The incumbent LECs disagree with the new entrants' characterization of these costs as *de minimis* and argue that

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[1571] *E.g.*, BellSouth comments at 53-54.

[1572] *See, e.g.*, Municipal Utilities comments at 19-20; NARUC reply at 9.

[1573] *See, e.g.*, AT&T comments at Attachment or Appendix C (Affidavit of William J. Baumol, Janusz A. Ordover, and Robert D. Willig), pp.13-14; Competition Policy Institute comments at 19; DJ comments at 31-32, reply at 8; Texas Public Utility Counsel comments at 24-25.

[1574] Texas Public Utility Counsel comments at 17-28; Sprint comments at 47- 50.

[1575] DoJ reply at 8; *see also* Competition Policy Institute comments at 19.

there is no evidence that unrecovered joint and common costs are much lower in the TSLRIC rates for physical elements than a TSLRIC standard based on the cost of providing services.[1576]

645. There is considerable disagreement in the record over the appropriate method of allocating joint and common costs under a TSLRIC approach. AT&T contends that the vast majority of the relevant costs will be causally attributed to particular network elements in the calculation of TSLRIC, and that we should prescribe rigid allocators that limit the incumbents' ability to manipulate prices by imposing high markups on new entrants.[1577] This approach, it is argued, is more competitively neutral than Ramsey pricing, which allocates costs based on inverse demand elasticity.[1578] In contrast, incumbent LECs advocate allocation of joint and common costs based on inverse demand elasticity,[1579] *i.e.*, according to Ramsey pricing principles.[1580] New entrants and other parties oppose the use of Ramsey pricing for interconnection and unbundled network elements for use in a

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[1576] *E.g.*, PacTel reply at 27; *see also* Cincinnati Bell reply at 10.

[1577] *See* AT&T comments at 61-62.

[1578] *See, e.g.*, Teleport comments at 47-48.

[1579] *See e.g.*, GTE comments at 63, comments at Attachment 3 (Affidavit of Edward C. Beauvais, Ph.D.), pp.4-6; *see also* Mass. Commission comments at 11- 12.

[1580] *See* Frank P. Ramsey, *A Contribution to the Theory of Taxation*, 37 Econ. J. 47 (1927); *see generally* Kenneth E. Train, *Optimal Regulation: The Economic Theory of Natural Monopoly* 115-40 (1992) (discussing efficiency properties of Ramsey prices); Bridger M. Mitchell & Ingo Vogelsang, *Telecommunications Pricing: Theory and Practice* 43-61 (1991).

market that is moving toward competition over the long-run.[1581] They contend that Ramsey pricing enables LECs to shift costs associated with entry into new competitive markets over to captive services.[1582] One state commission responds that the Commission's concern in this regard would be addressed by calculating demand elasticities on the basis of the total industry demand for the service, which would negate the influence of competition on demand elasticities.[1583]

646. Commenters suggested other means of allocating joint and common costs. For example, certain incumbent LECs argue that these costs must not be shifted from interconnection and unbundled elements to residential subscribers,[1584] while certain new entrants suggest that these costs should be recovered at the retail level.[1585] Many new entrants agree that the Commission should require allocation of joint and common costs that minimizes the opportunity for incumbent LECs to harm competitors through strategic pricing.[1586] For example, some new entrants argue that states should be required to minimize allocation of joint and common costs to bottleneck or

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[1581] *See, e.g.*, Ad Hoc Telecommunications Users Committee comments at 39-41; CompTel comments at 79-80; MECA comments at 45; Teleport comments at 47-48; Texas Public Utility Counsel comments at 27; WinStar reply at 10-11.

[1582] *See, e.g.*, Ad Hoc Telecommunications Users Committee comments at 38-39.

[1583] *See, e.g.*, Mass. Commission comments at 12.

[1584] *See, e.g.*, Puerto Rico Tel. comments at 10; Rural Tel. Coalition comments at 27.

[1585] *E.g.*, MCI reply at 9-10.

[1586] *See, e.g.*, MCI reply at 9-10.

essential network elements.[1587] MCI and Sprint assert that such costs should be spread across all services provided by a carrier in proportion to the TSLRIC for each service.[1588] A few commenters assert that the Commission should adopt a fixed mark-up over TSLRIC for allocation of joint and common costs.[1589] Cable & Wireless supports the adoption of a rule that allocates common costs uniformly for all services offered. It argues that a disproportionate allocation system, that for example, assigns common costs strictly to retail services purchased for resale by small companies, but not to unbundled network elements utilized by larger competitors, would prove detrimental to the development of local competition.[1590] Finally, certain parties suggested that regardless of the method ultimately used to allocate joint and common costs, TSLRIC

[1587] *See, e.g.*, LCI comments at 4-5 (even under a TSLRIC methodology, it may be necessary to allocate joint direct costs among classes of service); Time Warner comments at 52-53 (only elements that can be duplicated by competitors or that are already available from other sources should include a reasonable markup over TSLRIC for shared and common costs); *see also* CFA/CU comments at 33-35 (allocation to such elements should be no more than the allocation of such costs to basic service).

[1588] *See* AT&T comments at 64; MCI reply at 9-10; Sprint comments at 47.

[1589] *See, e.g.*, Competition Policy Institute comments at 19 (suggesting an overhead loading of six percent); *see also* Sprint comments at 48-49 (joint and common costs should be no more than 15 percent of TSLRIC)

[1590] Cable & Wireless comments at 35.

should serve as the floor[1591] and prices should not exceed stand-alone costs.[1592]

647. *Reasonable Profit.* Commenters disagree over what should constitute a "reasonable profit." Numerous commenters argue that a TSLRIC-based methodology for the pricing of interconnection and unbundled network elements includes a reasonable profit and is, therefore, consistent with the 1996 Act.[1593] These commenters argue that economic measures, such as TSLRIC, reflect a reasonable profit by including the cost of capital.[1594] Time Warner and NEXTLINK contend that permitting incumbent LECs to receive a profit above that contained within TSLRIC pricing would provide them with a greater return on facilities than was permitted under rate-of-return regulation by "double- counting" the profit.[1595] Furthermore, NEXTLINK rejects the notion that profit includes the recovery of embedded costs or is a means of recovering

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[1591] *See, e.g.*, Citizens Utilities comments at 19; Florida Commission comments at 26; SBC comments at 93-94.

[1592] *See, e.g.*, AT&T comments at Appendix C (Affidavit of William J. Baumol, Janusz A. Ordover, and Robert D. Willig), pp.14-15; TDS comments at 21.

[1593] *See, e.g.*, CompTel comments at 69-70; LDDS comments at 61; MCI comments at 61-62; Texas Public Utility Counsel comments at 19-20; WinStar comments at 29; Ad Hoc Telecommunications Users' Committee reply at Appendix A (Interconnection Pricing Standards for Monopoly Rate Elements in a Potentially Competitive Local Telecommunications Market), p. 12.

[1594] *E.g.*, AT&T reply at 31; CompTel comments at 69-70, reply at 39; DoJ reply at 9; Frontier reply at 12-15; MCI comments at 61-62; Texas Public Utility Counsel comments at 19-20; WinStar comments at 29.

[1595] NEXTLINK comments at 28; Time Warner reply at 31-32.

subsidies for universal service currently recovered through access charges such as the transport interconnection charge or carrier common line charge, or their intrastate equivalents.[1596] Similarly, LDDS believes that "reasonable profit" cannot be read to include contribution to costs having nothing to do with providing the network elements or interconnection that are the subject of a section 252 pricing standard.[1597]

648. Incumbent LECs, however, contend that setting rates on a TSLRIC-based methodology alone would violate section 252(d)(1) by precluding recovery of a reasonable profit.[1598] NYNEX and USTA state that profit is what a firm makes after it recovers its total costs of providing all of its services, including its investment-related costs.[1599] Ameritech similarly contends that the term "reasonable profit" means the ability to earn positive economic profits as an incentive for efficiency and innovation.[1600] PacTel argues that, in order to allow for a reasonable profit, rates for interconnection and unbundled elements must permit full recovery of historical accounting costs. PacTel charges that the federal courts have held that the determination of a "reasonable profit" should consider the effect on the carrier's whole enterprise and,

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[1596] NEXTLINK comments at 28-29.

[1597] LDDS comments at 61.

[1598] *See, e.g.*, GTE comments at 60; NYNEX comments at 51-52; PacTel comments at 69; SBC comments at 88; TCA comments at 9; TDS comments at 18; *see also* GTE comments at Attachment 3 (Affidavit of Edward C. Beauvais, Ph.D.), p.9.

[1599] *See* NYNEX comments at 42; USTA comments at 43.

[1600] *See* Ameritech comments at 70-71.

therefore, the sum of the carrier's rates must enable it to recover its total historical costs.[1601]

649. Several parties contend that the issue of what constitutes a reasonable profit should be left to the states. Citizen Utilities contends that the issue of whether profit is reasonable is a question of fact to be resolved, where necessary, in arbitration proceedings.[1602] Time Warner argues that what constitutes reasonable profit should, as a matter of policy, vary depending on the nature of the facilities or services being provided and should, therefore, be left to the states.[1603] The Illinois Commission argues that states may even use rate-of-return methodologies for the determination of reasonable profit.[1604]

650. There is also disagreement among the commenters regarding the force of the reasonable profit language in section 252. While many incumbent LECs interpret Section 252(d)(1) as *requiring* prices to include a reasonable profit,[1605] certain new entrants and other parties argue that the reasonable profit language is permissive, not mandatory.[1606] For example, several LECs contend that, to avoid confiscation of their property, LECs are entitled to full operating expenses as

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[1601] *See* PacTel comments at 65-66, *citing FPC v. Hope Natural Gas*, 320 U.S. 591 (1944) and *Jersey Central Power & Light v. FERC*, 810 F.2d 1168, 1172 (D.C. Cir. 1987).

[1602] Citizens Utilities comments at 17.

[1603] Time Warner comments at 52.

[1604] Illinois Commission reply at 15.

[1605] *See, e.g.*, PacTel comments at 65-66.

[1606] *See, e.g.*, AT&T reply at 31; Cox reply at 29; DoJ reply at 15.

well as the capital costs of doing business and a reasonable profit.[1607] The Ohio Consumers' Counsel, however, argues that the language of section 252(d)(1) indicates that it is at the discretion of the state commissions to determine whether to allow rates to reflect a reasonable profit.[1608]

651. USTA contends that "purely forward-looking TSLRIC" should not be the price for interconnection elements because "telecommunications networks are mostly sunk costs."[1609] It argues that, when investment in facilities requires sunk and irreversible costs, a firm may not be able to recover this investment over the physical life of the facilities due to the risks of decreases in value resulting from future competition. USTA contends that allowing other carriers into the provision of local exchange service will subject incumbent LECs to these types of risks. It then claims that TSLRIC calculations do not appropriately account for these additional risks.

652. USTA also argues that the risks to which the incumbent LECs will be subject as a result of competition in the local exchange market include the risks from facing new competition, technological change, change in demand, and interest rates. It further argues that these risks will result in many situations in which the incumbent LECs may face a reduction in profits (downside risk) and no situations in which the incumbent LECs may see an increase in their profits. Thus, incumbent LECs must be compensated for these additional risks, according to USTA. It concludes that TSLRIC

[1607] *See, e.g.*, MECA comments at 44, 49; PacTel comments at 65-67.

[1608] Ohio Consumers' Counsel comments at 26.

[1609] *See* USTA reply at Attachment 1 (Reply Affidavit of Professor Jerry A. Hausman), p.1.

calculations fail to provide this compensation, stating "TSLRIC can be biased downward by a factor of three."[1610]

653. Similarly, Bell Atlantic asserts that, in a market where input prices are declining, a TSLRIC standard is not the appropriate standard because, "in a world of continual technological progress, it would be irrational for firms constantly to update their facilities in order completely to incorporate today's lowest-cost technology."[1611] Thus, it argues that because a carrier would not replace its entire existing set of facilities (a sunk investment) with the best available technology at a given point, the price of the best available technology understates the cost of providing service.[1612]

654. The Consumer Federation of America, disputing the incumbent LECs' claims regarding risk premiums, argues that risk premiumsare reflected in the large returns incumbent LECs have already earned.[1613]

655. *Embedded Costs.* IXCs, competitive local entrants, and others interpret section 251(d)(1) as precluding states from setting rates by use of traditional cost-of-service regulation, with its detailed examination of historical

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[1610] *Id.* at 6. Presumably, by TSLRIC, Professor Hausman is referring to a TSLRIC assuming a risk free rate of return and a depreciation rate that encompasses the physical life of assets.

[1611] Bell Atlantic reply at Exhibit 1 (Declaration of Alfred E. Kahn and Timothy J. Tardiff), para.8a.

[1612] *Id.*

[1613] *See* CFA/CU comments at 61-63.

accounting costs and reliance on an embedded rate base.[1614] These parties argue that some measure of forward-looking economic costs, not historical costs, should be the only basis for setting rates for interconnection and unbundled network elements because only forward-looking economic costs meet the statutory requirement in section 252(d)(1) that such rates be "determined without reference to a traditional rate-of-return or other rate-based proceeding." Potential new entrants and many other commenters argue that historical or embedded costs should not be included in the prices of interconnection and unbundled network elements.[1615] NTIA asserts that it is unwise to include in the prices for interconnection and unbundled elements an amount to recover historical costs when the size of any shortfall between historical costs and TSLRIC's forward-

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[1614] *See, e.g.*, AT&T comments at 47; LDDS comments at 60; MCI comments at 61-62; MFS comments at 59; Sprint comments at 43; Teleport comments at 46; Time Warner comments at 51; Frontier comments at 21; Excel comments at 9; ACSI comments at 54-55; WinStar comments at 37-38; GST comments at 29-30; *see also* Ad Hoc Telecommunications Users Committee comments at 30-31; DoJ comments at 27-32, reply at 14; Kentucky Commission comments at 4; Texas Public Utility Counsel comments at 33-34; Telecommunications Resellers Ass'n comments at 38; Michigan Commission comments at 14; Pennsylvania Commission comments at 29; Ohio Commission comments at 42-43; Attorneys General reply at 7-8.

[1615] *See, e.g.*, AT&T comments at 47; CFA/CU reply at 18-19; DoJ comments at 27-32; N. Economides comments at 3; Frontier comments at 21-22, reply at 13; Jones Intercable comments at 25-26; LDDS comments at 60; MCI comments at 61-62; MFS comments at 59; Michigan Commission comments at 14; Sprint comments at 43; Teleport comments at 46; TCC comments at 15-16; Texas Public Utility Counsel comments at 33-34; Time Warner comments at 51; WinStar comments at 37-38; *see also* Ad Hoc Telecommunications Users' Committee reply at Appendix A (Interconnection Pricing Standards for Monopoly Rate Elements in a Potentially Competitive Local Telecommunications Market), pp.2-6;

looking costs will not be determined for many years after interLATA entry.[1616] These parties contend that permitting incumbent LECs to recover embedded costs in the prices they charge competitors for interconnection and unbundled network elements, while the incumbents experience much lower incremental costs, will result in inefficiently high prices that will either cause new entrants to over-build existing systems instead of maximizing the efficient use of the existing incumbent LEC's network, or discourage entry and investment in the local markets altogether.[1617] Moreover, opponents of embedded cost recovery maintain that these costs reflect past inefficiencies and their recovery does not create any incentive for incumbent LECs to maximize their network and operational efficiencies.[1618] Commenters also argue that embedded cost recovery permits incumbents to engage in anticompetitive, strategic, or discriminatory pricing by manipulating the cost of individual rate elements.[1619]

656. In response to claims that the incumbent LECs are entitled to recover embedded costs incurred as a result of their regulation, opponents of embedded cost recovery argue that, at the state level, incumbent LECs have been opting for incentive-based regulation and so have foregone the right to claim entitlement to recovery of embedded costs in exchange

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[1616] *See* NTIA reply at 28-29.

[1617] *See, e.g.*, Competition Policy Institute comments at 8; TCC comments at 15-16.

[1618] *See, e.g.*, Ad Hoc Telecommunications Users Committee comments at 53-54.

[1619] TCC comments at 15-16

for the flexibility to price their services to meet competition.[1620] AT&T argues that, because the majority of the incumbent LECs' embedded plant was installed after 1990, the forward-looking replacement costs of this old plant may in many cases be higher than the incumbent LECs' embedded costs.[1621] MCI disagrees with incumbent LECs' claims that excluding historical costs will discourage future investment by incumbent LECs and argues instead that incumbent LECs make investment decisions based upon expected future earnings.[1622]

657. Most incumbent LECs and some other parties dispute the claim that historical costs are precluded by the statute,[1623] asserting instead that section 252(d)(1) merely prohibits the use of a rate-of-return *proceeding* to determine such rates.[1624] Incumbent LECs argue that any pricing methodology the Commission adopts should permit recovery of historical or embedded costs in the prices of interconnection

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[1620] *See, e.g.*. GST comments at 29-30; WinStar comments at 38.

[1621] *See* AT&T reply at 33. For a detailed discussion, *See* AT&T reply at Appendix C (Affidavit of Lee Selwyn and Patricia Kravtin), pp.1-4.

[1622] *See* MCI reply at 15-16.

[1623] *See, e.g.*, Bell Atlantic comments at 37; BellSouth reply at 35-37; Colorado Commission comments at 34-35; GVNW comments at 35-36; Municipal Utilities comments at 19; NYNEX comments at 46-47; Ohio Consumers' Counsel comments at 23; PacTel comments at 65; Roseville Tel. comments at 6-8; Rural Tel. Coalition comments at 26-28; SBC comments at 88; TDS comments at 17-18; Texas Statewide Telephone Coop. Inc. comments at 7; USTA comments at 40.

[1624] *See, e.g.*, Bell Atlantic comments at 37; Municipal Utilities comments at 19; Ohio Consumers' Counsel comments at 23; Texas Statewide Telephone Coop. comments at 7.

and unbundled network elements.[1625] NYNEX specifically proposes a cost-accounting pricing methodology that places the burden on the incumbent LEC to identify the specific accounting data that would be associated with the particular type of interconnection requested by the competing carrier under section 251.[1626]

658. USTA cites reports that estimate that embedded costs that would not be recouped under a solely forward-looking pricing methodology are between $13 billion and $18.4 billion.[1627] Incumbent LECs contend that, because incumbent LECs must offset this shortfall of revenues against total costs that is created by a failure to recover embedded costs, they will be discouraged from investing to maintain and upgrade their networks in order to avoid the risk of again being unable to recover embedded costs.[1628] In addition, they argue that they incurred these embedded costs under federal and state regulatory oversight, which imposed on incumbent LECs social policy obligations and uneconomic costing practices, and that

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[1625] *See, e.g.*, Alaska Tel. Ass'n comments at 4-5; Ameritech comments at 60; Bell Atlantic comments at 36; Cincinnati Bell comments at 30; Lincoln Tel. comments at 11-12; Roseville Tel. comments at 7-8; SBC comments at 59; SNET comments at 29; USTA comments at 40; *see also* NECA comments at 6, reply at 8-9.

[1626] NYNEX comments 54-56, reply at 27.

[1627] USTA comments at 55.

[1628] *See, e.g.*, Bell Atlantic comments at Attachment 1 (Affidavit of Professor Jerry A. Hausman), p.2; Lincoln Tel. comments at 16-17; USTA reply at 23.

they therefore should be permitted to recover them.[1629] Incumbent LECs also assert that past investments were made under the belief that costs would be recovered, and that rates collected in the past did not reflect the risk that embedded costs might not be recovered in future rates.[1630] Several commenters argue that the opportunity to recover embedded costs through rates for interconnection and unbundled elements is particularly important for small and rural incumbent LECs.[1631] Finally, some parties also contend that, if they are not permitted to recover embedded costs, these costs must be recouped elsewhere, thus putting pressure on the states to recover these costs through local rates.[1632]

659. Despite their objections to embedded cost recovery, some non-incumbent parties explain conditions under which some limited recovery should be permitted. For example, MCI argues that, although embedded costs should not be recovered, it would be appropriate to allow incumbent LECs to recover any depreciation reserve deficiency,[1633] which MCI

[1629] *See, e.g.*, Ameritech reply at 30-31; BellSouth comments at 57; Lincoln Tel. comments at 16-17.

[1630] *See* Bell Atlantic reply at Exhibit 2 (Declaration of Richard A. Epstein), p.4.

[1631] *E.g.*, Home Tel. comments at 4; NECA comments at 9; TCA comments at 8; Texas Statewide Tel. Cooperative, Inc. comments at 9; Bay Springs reply at 10.

[1632] *See, e.g.*, USTA comments at 56; Wyoming Commission comments at 31-32; *see also* New York Commission reply at 9; *cf.*, Alabama Commission comments at 24-25; Texas Commission comments at 23, 26.

[1633] A reserve imbalance exists when the carrier's actual "book" depreciation reserve differs from its "theoretical" reserve, which is the (continued...)

estimates is only a small percentage of the residual between existing revenues and the revenues generated by a forward-looking, TSLRIC pricing of unbundled network elements.[1634] The Ad Hoc Telecommunications Users Committee asserts that, at a minimum, any nominal losses in economic value attributed to stranded investment should be weighed against the appreciation in value that incumbent LECs have experienced as reflected in share prices and market-to-book ratios.[1635] The Consumer Federation of America proposes that stranded investment might be recovered through an industry-wide recovery fund, if incumbent LECs can satisfy a rigorous set of showings to ensure that ratepayers are fairly treated.[1636] Finally, AT&T argues that, if the Commission determines that some portion of the residual should be recovered, it should be recovered through a competitively neutral, transitional, funding and distribution mechanism that will not distort competition.[1637]

660. *Opportunity Cost -- ECPR.* Incumbent LECs are the primary advocates for ECPR pricing of interconnection and

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[1633] (...continued)
reserve which would exist if service lives and salvage values had been accurately forecast in the past. When the theoretical reserve exceeds the book reserve, the imbalance is a reserve deficiency. For most LECs the reserve imbalance is an overall deficiency. *Amortization of Depreciation Reserve Imbalances of Local Exchange Carriers*, CC Docket No. 87-447, Report and Order, 3 FCC Rcd 984 (1988).

[1634] *See* MCI comments at 73-75.

[1635] Ad Hoc Telecommunications Users Committee comments at 26-27.

[1636] *See* CFA/CU comments at 67-68.

[1637] *See* AT&T comments at 70-73.

unbundled network elements.[1638] They argue generally that ECPR is the approach that most closely parallels the method a firm in a competitive market would employ when faced with the opportunity of selling inputs to firms that intend to compete with it in its final product market.[1639] GTE asserts that the ECPR's purpose is to reward efficient entry into the market for the end product by ensuring that the incumbent LEC sells network access to itself and to its rivals on the same, nondiscriminatory terms.[1640] Thus, GTE claims, the ECPR sets prices for network elements that provide incentives for efficient entry and compensates incumbent LECs for the economic costs associated with sale of such elements.[1641] GTE further argues that ECPR accomplishes these tasks regardless of the market structure and regardless of the presence or absence of economic rents.[1642] SBC arguesm that the ECPR is equivalent to the avoided cost rule used for setting the prices of resold services and equivalent to the efficient imputation rule for pricing of retail services.[1643] Supporters of ECPR pricing also argue that prices will continue to move toward competitive levels where

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[1638] *See, e.g.*, Ameritech comments at 91-93; GTE reply at 36-38; MECA comments at 50-52; PacTel comments at 69-71; SBC comments at Appendix A (Efficient Component Pricing Rule), pp.1-5; *see also* PacTel reply at Appendix C (Declaration of Richard D. Emerson).

[1639] *See, e.g.*, Rural Tel. Coalition reply at 28-30.

[1640] GTE comments at Attachment 4 (An Empirical Analysis of Pricing Under Sections 251 and 252 of the Telecommunications Act of 1996), p.7.

[1641] *Id.* at p.I-i

[1642] *Id.* at p.III-7.

[1643] SBC comments at Appendix A (Efficient Component Pricing Rule), pp.1-5.

competition is provided by a more efficient carrier than the incumbent LEC.[1644]

661. New entrants and many other commenters oppose the use of the ECPR to set prices for interconnection and access to unbundled network elements.[1645] These parties argue that ECPR does not comply with the statutory mandate that interconnection and network elements be based on costs. They assert that using ECPR would allow incumbent LECs to retain monopoly rents and protect the incumbent LECs from competitive disciplinary market forces.[1646] Opponents of ECPR contend that ECPR pricing does not replicate a competitive environment, but instead perpetuates inefficient and anticompetitive aspects of the current pricing structure. Other commenters argue that the incumbent LECs may use ECPR to exclude or marginalize a more efficient rival in the complementary market by forcing the rival to operate on the higher end of its cost curve through higher interconnection

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[1644] *See, e.g.*, Ameritech comments at 93; GTE comments at Attachment 4 (An Empirical Analysis of Pricing Under Sections 251 and 252 of the Telecommunications Act of 1996), p.III-6-8.

[1645] *See, e.g.*, Ad Hoc Telecommunications Users Committee comments at 55; ALTS reply at 26-29; Cable & Wireless comments 35; California Commission reply at 20; CFA/CU comments at 41-45; CompTel reply at 40-49; Cox reply at 29; DoJ reply at 11-13; Frontier comments at 23; Mass. Attorney General comments at 6- 9; MCI comments at 70-71, reply at 16; MFS comments at 60 n.67; Ohio Consumers' Counsel comments at 25 n.7, reply at 15; Sprint comments at 59 n.33; Texas Public Utility Counsel comments at 36; Time Warner comments at 56-58; Telecommunications Resellers Ass'n comments at 41-42; WinStar comments at 41.

[1646] *See, e.g.*, Cable & Wireless comments 35; California Commission reply at 20; CompTel reply at 40; Mass. Attorney General comments at 6-8; Time Warner comments 56-58; Telecommunications Resellers Ass'n comments at 41-42.

charges. They also argue that prices based on ECPR create incentives for incumbent LECs to shift costs of their competitive services to their bottleneck services, which distorts competition.[1647] Finally, opponents of ECPR assert that ECPR pricing shields the largest share of costs possible from competition, preserves the status quo, and imposes a barrier to entry.[1648]

662. Baumol, Ordover, and Willig, principal authors of the theory, explain that ECPR is not applicable for pricing of interconnection and unbundled network elements because the existing end user rates for local telecommunications are not appropriate as a baseline for ECPR. They claim that cross-subsidies are common in the current rates, and rates depart systematically from pertinent costs. Baumol, Ordover, and Willig conclude that applying ECPR to existing rates would result in component prices that lock in the incumbent LECs' monopoly profits and pricing inefficiencies, and would attract inefficient entry, where rates are too high, and would preclude efficient entry where rates are too low.[1649]

663. *Universal Service Subsidies.* Most parties other than incumbent LECs and some state commissions agree that it would be inconsistent with both the cost- based rate requirements of section 252(d)(1) and the requirement in section 254(b)(5), that universal service support mechanisms

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[1647] *See, e.g.*, N. Economides comments at 4-6.

[1648] *See, e.g.*, CFA/CU comments at 42.

[1649] *See* AT&T comments at Appendix C (Affidavit of William J. Baumol, Janusz A. Ordover, and Robert D. Willig), pp.8-9.

"be specific [and] predictable..."[1650] for states to include any universal service subsidies in the rates they set for interconnection, collocation, and unbundled network elements.[1651] They argue that the 1996 Act requires that rates reflect the economic cost of providing network elements and interconnection and does not authorize subsidies that have nothing to do with economic costs.[1652] With regard to the requirements of section 254, these parties argue that, to the extent rates need to be subsidized for universal service purposes, the subsidy should be collected from all carriers on a non-discriminatory and competitively neutral basis.[1653] The Washington Commission relates its own experience of rejecting US West's request for a per minute universal service charge to cover "carrier of last resort" obligations and its finding that

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[1650] 47 U.S.C. § 254(b)(5).

[1651] *See, e.g.*, ACTA comments at 23; AT&T comments at 70-73; Competition Policy Institute comments at 20; CompTel comments at 73-74; DoJ comments at 56- 59; MCI comments at 75; NEXTLINK comments at 29; Sprint comments at 61-62; Telecommunications Resellers Ass'n comments at 39 n.76; Teleport comments at 48-49; WinStar comments at 40-41, reply at 13-14.

[1652] AT&T and CompTel further contend that to permit any universal service subsidies in the rates set for interconnection, collocation and unbundled network elements would be to base rates on the embedded costs of incumbent LEC expenditures rather than the forward-looking economic costs of providing a network element as mandated by section 252(d)(1). *See* AT&T comments at 70- 73; CompTel comments at 72-74.

[1653] *See, e.g.*, ACTA comments at 23; AT&T comments at 69; Massachusetts Commission comments at 8-10; MCI comments at 75; Michigan Commission comments at 19.

residential rates were sufficient to cover the costs of residential service.[1654]

664. In contrast, several incumbent LECs and state public utility commissions maintain that incumbent LECs should be permitted to recover their embedded costs in the rates set for interconnection, collocation, and unbundled network elements. These commenters claim that rates based on incremental costs alone fail to account for certain costs historically incurred to accomplish carrier- of-last-resort and universal service social policy objectives.[1655] The Attorneys General caution the Commission not to classify legitimate contributions to joint and common costs as impermissible implicit universal service subsidies.[1656]

665. Several parties comment on the issue of how universal service funding should be handled during the interim period between the effective date of this order and the effective date of the Commission's order implementing the section 254 universal service requirements in May 1997. AT&T proposes that the Commission adopt a competitively-neutral funding and distribution mechanism.[1657] CompTel proposes that the Commission grant a blanket waiver of incremental cost pricing

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[1654] Washington Commission reply at 6.

[1655] *See, e.g.*, Alabama Commission comments at 24-25; Bay Springs, *et al.* comments at 16; BellSouth comments at 57; Matanuska Tel. comments at 2-3; TDS comments at 20; SBC comments at 89; Western Alliance comments at 6-7; *but see* BellSouth comments at 57 (if the universal service proceeding establishes a federal fund or if the states establish explicit funds, there will be no need for subsidies to be built into interconnection and unbundled network element rates).

[1656] Attorneys General reply at 10-11.

[1657] AT&T comments at 73.

for exchange access. Under CompTel's plan, pending completion of the section 254 proceeding, the incumbent LECs would continue to provide exchange access pursuant to their intrastate and interstate carrier-to- carrier access charge tariffs. At the conclusion of the section 254 proceeding, the Commission would determine whether the incumbent LECs are entitled to recover any portion of those revenues from competitive carriers and, if so, devise appropriate mechanisms for doing so. CompTel asserts that, by preserving the status quo for exchange access until those issues are fully considered and resolved, the Commission would ensure that the 1996 Act does not cause any unnecessary short-term disruption to carriers or consumers.[1658]

666. The Western Alliance contends that states should have authority to order the recovery of lost contribution through access charges until explicit and competitively neutral support mechanisms are in place.[1659] Similarly, the Massachusetts Commission argues that the states should have authority to include universal service subsidies in the rates for interconnection during this period. The Massachusetts Commission further contends that prohibiting states from exercising this authority will promote inefficient competition and ultimately could result in confiscation claims being filed by incumbent LECs.[1660]

667. Some parties take the position that "play or pay" proposals incorporate implicit subsidies into rates for interconnection and unbundled network elements and are

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[1658] CompTel comments at 84.

[1659] Western Alliance comments at 6-7.

[1660] Mass. Commission comments at 9-10.

therefore inconsistent with the 1996 Act.[1661] They further argue that such programs violate the 1996 Act because they do not require all telecommunications carriers to contribute on an equitable and nondiscriminatory basis and do not qualify as "specific, predictable and sufficient mechanisms" to preserve and advance universal service.[1662]

668. Other commenters argue, however, that the 1996 Act permits reasonable differences in interconnection rates charged to carriers so long as similarly- situated carriers are treated alike. They maintain that the anti- discrimination provisions of the 1996 Act only prohibit unreasonable discrimination. Thus, they contend that "play or pay" schemes are consistent with the 1996 Act.[1663] Several parties also contend that such schemes are authorized by the reservation of state power to adopt and implement universal service measures in section 254.[1664] Moreover, the New York Commission argues that the section 254(e) requirement that universal service funding must be explicit applies only to the federal Universal Service Fund, which is yet to be established, and not to state initiatives.[1665]

669. Some commenters urge the Commission to address universal service in the section 254 proceeding rather

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[1661] *See, e.g.*, Frontier comments at 23; Teleport comments at 48-49; Texas Public Utility Counsel comments at 35-36; WinStar reply at 14 n.20.

[1662] WinStar comments at 40; *see also* Texas Public Utility Counsel comments at 35.

[1663] *See, e.g.*, New York Commission comments at 15-18; NYNEX comments at 91- 97.

[1664] NYNEX comments at 95-97; New York Commission reply at 6.

[1665] New York Commission reply at 6.

than in the section 251/252 interconnection proceeding.[1666] Other commenters suggest that universal service, access restructure, and interconnection issues should be addressed in a coordinated manner or in a consolidated proceeding.[1667]

670. *Fifth Amendment Issues.* Several incumbent LECs claim that use of a LRIC-based pricing methodology that does not permit recovery of at least joint and common costs and a reasonable profit constitutes unlawful confiscation in violation of the Fifth and Fourteenth Amendments.[1668] Other LECs further argue that, in order to avoid an unconstitutional taking, any pricing rules we adopt must enable them to recover total costs, including historical or embedded costs.[1669] Generally, these parties contend that prices limited by a forward-looking economic cost methodology do not permit an incumbent LEC to remain profitable over time because LRIC fails to recover total costs.[1670] They assert that, if the Commission decides now, long after those costs have been sunk, to bar compensatory returns, it will violate due process and undermine the incumbent LECs' legitimate, investment-

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[1666] *See, e.g.*, Competition Policy Institute comments at 13-14; F. Williamson comments at 8; Texas Public Utility Counsel comments at 36; ALTS reply at 35.

[1667] *See, e.g.*, Ad Hoc Telecommunications Users Committee comments at 35; TDS comments at 20.

[1668] *See, e.g.*, GTE comments at 65-71; MECA comments at 42; Puerto Rico Telephone Company reply at 11-12; PacTel comments at 67.

[1669] *See, e.g.*, NYNEX comments at 43-44; PacTel comments at 65-66; SNET comments at 29; Roseville Tel. comments at 6-7.

[1670] *See, e.g.*, Ameritech comments at 62-70; GTE comments at 68-71, reply at 31-32; USTA comments at 39-42.

backed expectations.[1671] Such interference with legitimate investor expectations, they contend, constitutes an unlawful taking.[1672] GTE contends that Commission adoption of a pure TSLRIC methodology would represent an unconstitutional taking, because it would require use of the incumbent LEC's physical property, thus giving rise to an obligation to provide just compensation.[1673]

671. Other parties, including the Department of Justice and new entrants, contend that using a forward-looking cost-based pricing methodology for setting the rates for interconnection and unbundled elements does not constitute an unlawful taking.[1674] These commenters point out that many state commissions already utilize a forward-looking cost-based pricing methodology.[1675] They also argue that, because forward-looking cost-based rates capture all costs for interconnection and unbundled network elements, including the risk-adjusted cost of capital, such a methodology would not result in an unlawful taking.[1676] These parties further assert that the LECs' takings claims are premature, not demonstrated with

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[1671] *See, e.g.*, GTE comments at 66-71, reply at 31-33; USTA comments at 40- 45, reply at 21-25, 32-34.

[1672] *Id.*

[1673] *See* GTE comments at 65-67.

[1674] *See, e.g.*, ALTS reply at 8-11; AT&T comments at 70-71; CompTel reply at 37-40; DoJ reply at 13, 16-19; MCI reply at 18-20.

[1675] *See, e.g.*, AT&T comments at 49-50; Cable & Wireless reply at 24-25; MCI reply at 19. AT&T also notes that when U S West and BellSouth have been new entrants into markets, they have advocated a LRIC approach. AT&T comments at 50-51 n.72.

[1676] *See, e.g.*, Frontier reply at 14; MCI reply at 18-19.

sufficient specificity, and overstate the scope of the constitutional guarantee.[1677] Commenters note that no incumbent LEC has made any effort to demonstrate the actual impact of a LRIC-based pricing methodology on its "financial integrity."[1678] These parties contend that there is no unconstitutional impairment if the shortfall is not sufficient to jeopardize the operating and financial integrity of the utility. Finally, these commenters maintain that there is no constitutional right to a particular rate-setting methodology (*i.e.*, historical cost) and there are no general principles that require every component of an integral whole of a utility service to show a profit.[1679]

(3) Discussion

672. *Overview.* Having concluded in Section II.D., above, that we have the requisite legal authority and that we should establish national pricing rules, we conclude here that prices for interconnection and unbundled elements pursuant to sections 251(c)(2), 251(c)(3), and 252(d)(1), should be set at forward-looking long-run economic cost. In practice, this will mean that prices are based on the TSLRIC of the network element, which we will call Total Element Long Run Incremental Cost (TELRIC), and will include a reasonable allocation of forward-looking joint and common costs. The 1996 Act encourages competition by removing barriers to entry and providing an opportunity for potential new entrants to purchase unbundled incumbent LEC network elements to

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[1677] *See, e.g.*, DoJ reply at 16-18.

[1678] DoJ reply at 16-18; MCI reply at 18.

[1679] *See, e.g.*, Jones Intercable reply at 16-17.

compete efficiently to provide local exchange services. We believe that the prices that potential entrants pay for these elements should reflect forward- looking economic costs in order to encourage efficient levels of investment and entry.

673. In this section, we describe this forward-looking, cost-based pricing standard in detail. First, we define the terms we are using, explain how the methodology we are adopting differs from other costing approaches, and describe how it should be implemented. In particular, we explain that the price of a network element should include the forward-looking costs that can be attributed directly to the provision of services using that element, which includes a reasonable return on investment (*i.e.*, "profit"), plus a reasonable share of the forward-looking joint and common costs. Second, we address potential cost measures that must not be included in a TELRIC analysis, such as embedded (or historical) costs, opportunity costs, or universal service subsidies. Finally, we refute arguments that this methodology would violate the incumbent LECs' rights under the Fifth Amendment.

(a) Total Element Long Run Incremental Cost

674. *Definitions of Terms.* In light of the various possible definitions of a number of the critical economic terms used in this context, we begin by defining terms as we use them in this Order. Specifically, we provide definitions for the following terms: "incremental cost;" "economic cost;" "embedded or accounting cost;" "joint cost;" "common cost;" "long run incremental cost;" "total service long run incremental cost;" "total element long run incremental cost." In addition to defining these terms, we explain the economic rationale behind the concepts.

675. Incremental costs are the additional costs (usually expressed as a cost per unit) that a firm will incur as a

result of expanding the output of a good or service by producing an additional quantity of the good or service.[1680] Incremental costs are forward-looking in the sense that these costs are incurred as the output level changes by a given increment.[1681] The costs that are considered incremental will vary greatly depending on the size of the increment. For example, the incremental cost of carrying an additional call from a residence that is already connected to the network to its end office is virtually zero. The incremental cost of connecting a new residence to its end office, however, is the cost of the loop. Forward-looking incremental costs, plus a portion of the forward-looking joint and common costs, are sometimes referred to as "economic costs." Embedded or accounting costs are costs that firms incurred in the past for providing a good or service and are recorded as past operating expenses and depreciation. Due to changes in input prices and technologies, incremental costs may differ from embedded costs of that same increment. In competitive markets, the price of a good or service will tend towards its long-run incremental cost.

676. Certain types of costs arise from the production of multiple products or services. We use the term "joint costs" to refer to costs incurred when two or more outputs are produced in fixed proportion by the same production process (*i.e.*, when one product is produced, a second product is generated by the same production process at no additional cost). The term "common costs" refers to costs that are incurred in connection with the production of multiple products or services,

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[1680] *See* 1 Alfred Kahn *The Economics of Regulation* 66 (1971); William Baumol and Gregory Sidak, *Toward Competition in Local Telephony* 57 (1994).

[1681] William Baumol and Gregory Sidak, *Toward Competition in Local Telephony* 57 (1994).

and remains unchanged as the relative proportion of those products or services varies (*e.g.*, the salaries of corporate managers). Such costs may be common to all services provided by the firm or common to only a subset of those services or elements. If a cost is common with respect to a subset of services or elements, for example, a firm avoids that cost only by not providing each and every service or element in the subset. For the purpose of our discussion, we refer to joint and common costs as simply common costs unless the distinction is relevant in a particular context.

677. The term "long run," in the context of "long run incremental cost," refers to a period long enough so that all of a firm's costs become variable or avoidable.[1682] The term "total service," in the context of TSLRIC, indicates that the relevant increment is the entire quantity of the service that a firm produces, rather than just a marginal increment over and above a given level of production. Depending on what services are the subject of a study, TSLRIC may be for a single service or a class of similar services. TSLRIC includes the incremental costs of dedicated facilities and operations that are used by only the service in question. TSLRIC also includes the incremental costs of shared facilities and operations that are used by that service as well as other services.

678. While we are adopting a version of the methodology commonly referred to as TSLRIC as the basis for pricing interconnection and unbundled elements, we are coining the term "total element long run incremental cost" (TELRIC) to describe our version of this methodology. The incumbent LEC

[1682] *See, e.g.*, William Baumol, *Economic Theory and Operations Analysis* 290 (4th ed. 1977) ("The very long run is a period so long that all of the firm's present contracts will have run out, its present plant and equipment will have been worn out or rendered obsolete and will therefore need replacement, etc.").

offerings to be priced using this methodology generally will be "network elements," rather than "telecommunications services," as defined by the 1996 Act.[1683] More fundamentally, we believe that TELRIC-based pricing of discrete network elements or facilities, such as local loops and switching, is likely to be much more economically rational than TSLRIC-based pricing of conventional services, such as interstate access service and local residential or business exchange service. As discussed in greater detail below, separate telecommunications services are typically provided over shared network facilities, the costs of which may be joint or common with respect to some services. The costs of local loops and their associated line cards in local switches, for example, are common with respect to interstate access service and local exchange service, because once these facilities are installed to provide one service they are able to provide the other at no additional cost. By contrast, the network elements, as we have defined them,[1684] largely correspond to distinct network facilities. Therefore, the amount of joint and common costs that must be allocated among separate offerings is likely to be much smaller using a TELRIC methodology rather than a TSLRIC approach that measures the costs of conventional services. Because it is difficult for regulators to determine an economically-optimal allocation of any such joint and common costs, we believe that pricing elements, defined as facilities with associated features and functions, is more reliable from the standpoint of economic efficiency than pricing services that use shared network facilities.

679. *Description of TELRIC-Based Pricing Methodology*. Adopting a pricing methodology based on forward-looking, economic costs best replicates, to the extent

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[1683] 47 U.S.C. §§ 3(29), 3(46).

[1684] *See supra* Section V.

possible, the conditions of a competitive market. In addition, a forward-looking cost methodology reduces the ability of an incumbent LEC to engage in anti-competitive behavior. Congress recognized in the 1996 Act that access to the incumbent LECs' bottleneck facilities is critical to making meaningful competition possible. As a result of the availability to competitors of the incumbent LEC's unbundled elements at their economic cost, consumers will be able to reap the benefits of the incumbent LECs' economies of scale and scope, as well as the benefits of competition. Because a pricing methodology based on forward-looking costs simulates the conditions in a competitive marketplace, it allows the requesting carrier to produce efficiently and to compete effectively, which should drive retail prices to their competitive levels. We believe that our adoption of a forward-looking cost-based pricing methodology should facilitate competition on a reasonable and efficient basis by all firms in the industry by establishing prices for interconnection and unbundled elements based on costs similar to those incurred by the incumbents, which may be expected to reduce the regulatory burdens and economic impact of our decision for many parties, including both small entities seeking to enter the local exchange markets and small incumbent LECs.[1685]

680. We note that incumbent LECs have greater access to the cost information necessary to calculate the incremental cost of the unbundled elements of the network. Given this asymmetric access to cost data, we find that incumbent LECs must prove to the state commission the nature and magnitude of any forward-looking cost that it seeks to recover in the prices of interconnection and unbundled network elements.

[1685] *See* Regulatory Flexibility Act, 5 U.S.C. §§ 601 *et seq.*

681. Some parties express concern that the information required to compute prices based on forward-looking costs is inherently so hypothetical as to be of little or no practical value.[1686] Based on the record before us, we disagree. A number of states, which ultimately will have to review forward- looking cost studies in carrying out their duties under section 252, either have already implemented forward-looking, incremental costing methodologies to set prices for interconnection and unbundled network elements or support the use of such an approach.[1687] While these states have applied somewhat different definitions of, and approaches to setting prices developed on, an incremental cost methodology, the record demonstrates that such approaches are practical and implementable.

682. We conclude that, under a TELRIC methodology, incumbent LECs' prices for interconnection and unbundled network elements shall recover the forward- looking costs directly attributable to the specified element, as well as a reasonable allocation of forward-looking common costs. Per-unit costs shall be derived from total costs using reasonably accurate "fill factors" (estimates of the proportion of a facility

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[1686] *See, e.g.*, GVNW comments at 35; NYNEX comments at 54; USTA comments at 47-50.

[1687] *See, e.g.*, Louisiana Commission comments at 4; Texas Commission comments at 22; Washington Commission comments at 25; California Commission comments at 28-29; Colorado Commission comments at 35; Maryland Commission comments at 7-8; Oklahoma Commission comments at Attachment A (Oklahoma Corporation Commission Telephone Rules, OAC 165:55) pp. 10-11. The Wyoming and Florida commissions have indicated their support for such an approach. *See* Wyoming Commission comments at 27 (supporting uniform use of TSLRIC costing methods so long as details left to states); *see also* Florida Commission comments at 26 (TSLRIC may be appropriate to set cost standard for a price floor).

that will be "filled" with network usage); that is, the per-unit costs associated with a particular element must be derivedby dividing the total cost associated with the element by a reasonable projection of the actual total usage of the element. Directly attributable forward- looking costs include the incremental costs of facilities and operations that are dedicated to the element. Such costs typically include the investment costs and expenses related to primary plant used to provide that element. Directly attributable forward-looking costs also include the incremental costs of shared facilities and operations. Those costs shall be attributed to specific elements to the greatest extent possible.[1688] For example, the costs of conduits shared by both transport and local loops, and the costs of central office facilities shared by both local switching and tandem switching, shall be attributed to specific elements in reasonable proportions. More broadly, certain shared costs that have conventionally been treated as common costs (or overheads) shall be attributed directly to the individual elements to the greatest extent possible. The forward-looking costs directly attributable to local loops, for example, shall include not only the cost of the installed copper wire and telephone poles but also the cost of payroll and other back office operations relating to the line technicians, in addition to other attributable costs.

683. Forward-looking cost methodologies, like TELRIC, are intended to consider the costs that a carrier would incur in the future. Thus, a question arises whether costs should be computed based on the least-cost, most efficient network configuration and technology currently available, or whether forward- looking cost should be computed based on incumbent

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[1688] *Compare Telephone Company-Cable Television Cross-Ownership Rules*, CC Docket No. 87-266, Memorandum Opinion and Order on Reconsideration and Third Further Notice of Proposed Rulemaking, 10 FCC Rcd 244, 345-46 (1994).

LECs' existing network infrastructures, taking into account changes in depreciation and inflation. The record indicates three general approaches to this issue. Under the first approach, the forward-looking economic cost for interconnection and unbundled elements would be based on the most efficient network architecture, sizing, technology, and operating decisions that are operationally feasible and currently available to the industry. Prices based on the least-cost, most efficient network design and technology replicate conditions in a highly competitive marketplace by not basing prices on existing network design and investments unless they represent the least-cost systems available for purchase. This approach, however, may discourage facilities-based competition by new entrants because new entrants can use the incumbent LEC's existing network based on the cost of a hypothetical least-cost, most efficient network.

684. Under the second approach, the cost of interconnection and unbundled network elements would be based on existing network design and technology that are currently in operation.[1689] Because this approach is not based on a hypothetical network in the short run, incumbent LECs could recover costs based on their existing operations, and prices for interconnection and unbundled elements that reflect inefficient or obsolete network design and technology. This is essentially an embedded cost methodology.

685. Under the third approach, prices for interconnection and access to unbundled elements would be developed from a forward-looking economic cost methodology based on the most efficient technology deployed in the incumbent LEC's current wire center locations. This approach mitigates incumbent LECs' concerns that a forward-looking

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[1689] *See, e.g.*, BellSouth reply at 37; Roseville Tel. reply at 8; USTA reply at 18-19.

pricing methodology ignores existing network design, while basing prices on efficient, new technology that is compatible with the existing infrastructure. This benchmark of forward-looking cost and existing network design most closely represents the incremental costs that incumbents actually expect to incur in making network elements available to new entrants. Moreover, this approach encourages facilities-based competition to the extent thatnew entrants, by designing more efficient network configurations, are able to provide the service at a lower cost than the incumbent LEC. We, therefore, conclude that the forward-looking pricing methodology for interconnection and unbundled network elements should be based on costs that assume that wire centers will be placed at the incumbent LEC's current wire center locations, but that the reconstructed local network will employ the most efficient technology for reasonably foreseeable capacity requirements.

686. We agree with USTA, Bell Atlantic, and BellSouth that, as a theoretical matter, the combination of significant sunk investment, declining technology costs, and competitive entry may increase the depreciation costs and cost of capital of incumbent LECs. We do not agree, however, that TSLRIC does not or cannot account for risks that an incumbent LEC incurs because it has sunk investments in facilities. On the contrary, properly designed depreciation schedules should account for expected declines in the value of capital goods. Both AT&T and MCI appear to agree with this proposition.[1690]

[1690] *See* Letter from Leonard S. Sawicki, Director, FCC Affairs, MCI Telecommunications Corp. to William F. Caton, Acting Secretary, FCC, July 24, 1996 at Attachment (Depreciation and Capital Recovery Issues: A Response to Professor Hausman), pp.1-3; *see also* Letter from Richard N. Clarke, AT&T, to William F. Caton, Acting Secretary, FCC, July 19, 1996 at Attachment (Capital Recovery Issues in TSLRIC Pricing: Response to (continued...)

For example, AT&T states, "[i]n order to estimate TSLRIC, one must perform a discounted cash flow analysis of the future costs associated with the decision to invest .... One-time costs associated with the acquisition of capital goods are amortized over the economic life of the assets using the user cost of capital ..., which requires accounting for both expected capital good price changes and economic depreciation."[1691] Moreover, we are confident that parties to an arbitration with TELRIC studies can propose specific depreciation rate adjustments that reflect expected asset values over time.

687. As noted, we also agree that, as a matter of theory, an increase in risk due to entry into the market for local exchange service can increase a LEC's cost of capital. We believe that this increased risk can be partially mitigated, however, by offering term discounts, since long-term contracts can minimize the risk of stranded investment. In addition, growth in overall market demand can increase the potential of the incumbent LEC to use some of its displaced facilities for other purposes. Overall, we think that these factors can and should be captured in any LRIC model and therefore we do not agree that this requires a departure from the general principle of forward- looking cost-based pricing for network elements.

688. We are not persuaded by USTA's argument that forward looking methodologies fail to adjust the cost of capital to reflect the risks associated with irreversible investments and that they are "biased downward by a factor of three." First, USTA's argument unrealistically assumes that competitive

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[1690] (...continued)
Professor Jerry A. Hausman).

[1691] Letter from Richard N. Clarke, AT&T, to William F. Caton, Acting Secretary, FCC, July 19, 1996 at Attachment (Capital Recovery Issues in TSLRIC Pricing: Response to Professor Jerry A. Hausman), p.8.

entry would be instantaneous. The more reasonable assumption of entry occurring over time will reduce the costs associated with sunk investment. Second, we find it unlikely that investment in communications equipment is entirely irreversible or that such equipment would become valueless once facilities-based competition begins. In a growing market, there most likely would be demand for at least some embedded telecommunications equipment, which would therefore retain its value. Third, contractual arrangements between the new entrant and the incumbent that specifically address USTA's concerns and protect incumbent's investments during transition can be established.

689. Finally we are not persuaded that the use by firms of hurdle rates that exceed the market cost of capital is convincing evidence that sunk investments significantly increase a firm's cost of capital. An alternative explanation for this phenomenon is that the process that firms use to choose among investment projects results in overestimates of their returns. Firms therefore use hurdle rates in excess of the market cost of capital to account for these overestimates.[1692]

690. *Summary of TELRIC Methodology.* The following summarizes our conclusions regarding setting prices of interconnection and access to unbundled network elements based on the TELRIC methodology for such elements. The increment that forms the basis for a TELRIC study shall be the

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[1692] *See* Richard Thaler, *The Winner's Curse*, 2 J. Econ. Perspectives 201 (1988); Keith Brown, *Note on the Apparent Bias of Net Revenue Estimates for Capital Investment Projects*, 29 J. Fin. 1215-16 (1974); Daniel Kahneman and Daniel Lovallo, *Timid Choices, Bold Forecasts*, 39 Management Science 17, 28 (1993). In addition, we note that Hausman's arguments that TSLRIC method underestimate the true cost of an element apply only to the capital expense associated with an element and not to the operating expense.

entire quantity of the network element provided. As we have previously stated, all costs associated with the providing the element shall be included in the incremental cost. Only forward- looking, incremental costs shall be included in a TELRIC study. Costs must be based on the incumbent LEC's existing wire center locations and most efficient technology available.

691. Any function necessary to produce a network element must have an associated cost. The study must explain with specificity why and how specific functions are necessary to provide network elements and how the associated costs were developed. Only those costs that are incurred in the provision of the network elements in the long run shall be directly attributable to those elements. Costs must be attributed on a cost-causative basis. Costs are causally-related to the network element being provided if the costs are incurred as a direct result of providing the network elements, or can be avoided, in the long run, when the company ceases to provide them. Thus, for example, the forward-looking costs of capital (debt and equity) needed to support investments required to produce a given element shall be included in the forward-looking direct cost of that element. Directly attributable costs shall include costs such as certain administrative expenses, which have traditionally been viewed as common costs, if these costs vary with the provision of network elements. Retailing costs, such as marketing or consumer billing costs associated with retail services, are not attributable to the production of network elements that are offered to interconnecting carriers and must not be included in the forward-looking direct cost of an element.

692. In a TELRIC methodology, the "long run" used shall be a period long enough that all costs are treated as

variable and avoidable.[1693] This "long run" approach ensures that rates recover not only the operating costs that vary in the short run, but also fixed investment costs that, while not variable in the short term, are necessary inputs directly attributable to providing the element.

693. States may review a TELRIC economic cost study in the context of a particular arbitration proceeding, or they may conduct such studies in a rulemaking and apply the results in various arbitrations involving incumbent LECs. In the latter case, states must replace any interim rates[1694] set in arbitration proceedings with the permanent rate resulting from the separate rulemaking. This permanent rate will take effect at or about the time of the conclusion of the separate rulemaking and will apply from that time forward.

694. *Forward-Looking Common Costs.* Certain common costs are incurred in the provision of network elements. As discussed above, some of these costs are common to only a subset of the elements or services provided by incumbent LECs. Such costs shall be allocated to that subset, and should then be allocated among the individual elements or services in that subset, to the greatest possible extent. For example, shared maintenance facilities and vehicles should be allocated only to the elements that benefit from those facilities and vehicles. Common costs also include costs incurred by the firm's operations as a whole, that are common to all services and elements (*e.g.*, salaries of executives involved in overseeing all activities of the business), although for the purpose of pricing interconnection and access to unbundled elements,

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[1693] *See* 1 Alfred E. Kahn *The Economics of Regulation: Principles and Institutions* 70-71 (1988).

[1694] *See infra*, Section VII.C., discussing default proxy price ceilings and ranges.

which are intermediate products offered to competing carriers, the relevant common costs do not include billing, marketing, and other costs attributable to the provision of retail service.[1695] Given these common costs, setting the price of each discrete network element based solely on the forward-looking incremental costs directly attributable to the production of individual elements will not recover the total forward-looking costs of operating the wholesale network.[1696] Because forward-looking common costs are consistent with our forward-looking, economic cost paradigm, a reasonable measure of such costs shall be included in the prices for interconnection and access to network elements.

695. The incumbent LECs generally argue that common costs are quite significant,[1697] while several other parties maintain that these amounts are minimal.[1698] Because the unbundled network elements correspond, to a great extent, to discrete network facilities, and have different operating characteristics, we expect that common costs should be smaller than the common costs associated with the long-run incremental cost of a service. We expect that many facility costs that may be common with respect to the individual services provided by the facilities can be directly attributed to the facilities when offered as unbundled network elements. Moreover, defining the network elements at a relatively high

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[1695] *See infra*, Section VIII.B., describing "avoided costs" in the resale context.

[1696] *See, e.g.*, AT&T comments at 61-66; Teleport comments at 47-48.

[1697] *See, e.g.*, PacTel reply at 27-28; *see also* Cincinnati Bell reply at 10; USTA comments at Attachment 1 (Affidavit of Jerry A. Hausman), p.4 n.1.

[1698] *See, e.g.*, Competition Policy Institute comments at 19; MCI comments at 66; Texas Public Utility Counsel comments at 24.

level of aggregation, as we have done,[1699] should also reduce the magnitude of the common costs. A properly conducted TELRIC methodology will attribute costs to specific elements to the greatest possible extent, which will reduce the common costs. Nevertheless, there will remain some common costs that must be allocated among network elements and interconnection services. For example, at the sub-element level of study (*e.g.*, identifying the respective costs of 2-wire loops, 4-wire loops, ISDN loops, and so on), common costs may be a significant proportion of all the costs that must be recovered from sub-elements. Given the likely asymmetry of information regarding network costs, we conclude that, in the arbitration process, incumbent LECs shall have the burden to prove the specific nature and magnitude of these forward-looking common costs.

696. We conclude that forward-looking common costs shall be allocated among elements and services in a reasonable manner, consistent with the pro- competitive goals of the 1996 Act. One reasonable allocation method would be to allocate common costs using a fixed allocator, such as a percentage markup over the directly attributable forward-looking costs. We conclude that a second reasonable allocation method would allocate only a relatively small share of common costs to certain critical network elements, such as the local loop and collocation, that are most difficult for entrants to replicate promptly (*i.e.*, bottleneck facilities). Allocation of common costs on this basis ensures that the prices of network elements that are least likely to be subject to competition are not artificially inflated by a large allocation of common costs. On the other hand, certain other allocation methods would not be reasonable. For example, we conclude that an allocation methodology that relies exclusively on allocating common

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[1699] *See supra*, Section V., discussing unbundling requirements.

costs in inverse proportion to the sensitivity of demand for various network elements and services may not be used.[1700] We conclude that such an allocation could unreasonably limit the extent of entry into local exchange markets by allocating more costs to, and thus raising the prices of, the most critical bottleneck inputs, the demand for which tends to be relatively inelastic. Such an allocation of these costs would undermine the pro-competitive objectives of the 1996 Act.

697. We believe that our treatment of forward-looking common costs will minimize regulatory burdens and economic impact for all parties involved in arbitration of agreements for interconnection and access to unbundled elements, and will advance the 1996 Act's pro-competitive objectives for local exchange and exchange access markets.[1701] In our decisionmaking, we have considered the economic impact of our rules in this section on small incumbent LECs. For example, although opposed to the use of a forward-looking, economic cost methodology, small incumbent LECs favor the recovery of joint and common costs in the event the Commission adopts forward-looking cost methodology. We are adopting such an approach. Moreover, the cost-based pricing methodology that we are adopting is designed to permit incumbent LECs to recover their economic costs of providing interconnection and unbundled elements, which may minimize

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[1700] *See* Frank P. Ramsey, *A Contribution to the Theory of Taxation*, 37 Econ. J. 47 (1927); *see generally* Kenneth E. Train, *Optimal Regulation: The Economic Theory of Natural Monopoly* 115-40 (1992) (discussing efficiency properties of Ramsey prices); Bridger M. Mitchell & Ingo Vogelsang, *Telecommunications Pricing: Theory and Practice* 43-61 (1991). The sensitivity of demand is measured by the elasticity of demand, which is defined as the percentage change in the quantity of a service demanded for a one per cent change in price.

[1701] *See* Regulatory Flexibility Act, 5 U.S.C. §§ 601 *et seq.*

the economic impact of our decisions on incumbent LECs, including small incumbent LECs. We also note that certain small incumbent LECs are not subject to our rules under section 251(f)(1) of the 1996 Act, unless otherwise determined by a state commission, and certain other small incumbent LECs may seek relief from their state commissions from our rules under section 251(f)(2) of the 1996 Act.[1702]

698. We further conclude that, for the aggregate of all unbundled network elements, incumbent LECs must be given a reasonable opportunity to recover their forward-looking common costs attributable to operating the wholesale network. In no instance should prices exceed the stand-alone cost for a specific element, and in most cases they should be below stand-alone costs. Stand-alone costs are defined as the forward-looking cost that an efficient entrant would incur in providing a given element or any combination of elements. No price higher than stand-alone cost could be sustained in a market from which entry barriers were completely absent. Where there are few common costs, there is likely to be only a minimal difference between the forward- looking costs that are directly attributable to the particular element, which excludes these costs, and stand-alone cost, which includes all of them. Network elements should not, however, be priced at levels that would enable the incumbent LEC to recover the same common costs multiple times from different elements. Any multiple recovery would be unreasonable and thus in violation of the statutory standard. Further, we note that the sum of the direct costs and the forward-looking common costs of all elements will likely differ from the incumbent LEC's historical, fully distributed costs.

[1702] 47 U.S.C. § 251(f).

699. *Reasonable Return on Investment and "Profit."* Section 252(d)(1) states that rates for interconnection and access to unbundled elements "may include a reasonable profit."[1703] We find that the TELRIC pricing methodology we are adopting provides for such a reasonable profit and thus no additional profit is justified under the statutory language. We note there are two types of profit. First, in plain English, profit is defined as "the excess of returns over expenditure in a transaction or a series of transactions."[1704] This is also known as a "normal" profit, which is the total revenue required to cover all of the costs of a firm, including its opportunity costs.[1705] Second, there is "economic" profit, which is any return in excess of normal profit.[1706] Thus, for example, if the normal return in an industry is 10 percent and a firm earns a return of 14 percent, the economic profit for that firm is 4 percent. Economic is also referred to as "supranormal" profit. We conclude that the definition of "normal" profit is embodied in "reasonable profit" under Section 252(d)(1).

700. The concept of normal profit is embodied in forward-looking costs because the forward-looking cost of capital, *i.e.*, the cost of obtaining debt and equity financing, is one of the forward-looking costs of providing the network elements. This forward-looking cost of capital is equal to a normal profit. We conclude that allowing greater than normal profits would not be "reasonable" under sections 251(c) and

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[1703] 47 U.S.C. § 252(d)(1).

[1704] *Webster's New Collegiate Dictionary* 931 (10th ed. 1994).

[1705] *See* David W. Pearce, *The MIT Dictionary of Modern Economics* (1994) at 310.

[1706] *Id.* at 415.

252(d)(1).[1707] Thus, contrary to the arguments put forth by several incumbent LECs, we find that adding an additional measure of profit to the risk-adjusted cost of capital[1708] in setting the prices for interconnection and access to unbundled

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[1707] We note that our interpretation is consistent with existing Supreme Court precedent concerning what constitutes a reasonable rate of return for a regulated public utility. For example, in *Bluefield Water Works*, the Court stated:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures.

Bluefield Water Works & Improvement Co. v. Public Service Comm'n of West Virginia, 262 U.S. 679, 692-93 (1923). Similarly, in *FPC v. Hope Natural Gas*, the Court stated:

> ... it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business. These include service on the debt and dividends on the stock ...By that standard the return to the equity owner should be commensurate with risks on investments in other enterprises having corresponding risks. The return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital.

Federal Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591, 603 (1994) *(Hope Natural Gas)*. *Cf.*, Charles F. Phillips, Jr., *The Economics of Regulation* 260 (Rev. Ed. 1965)("...a regulated company must be afforded the opportunity not only of assuring its financial integrity so that it can maintain its credit standing and attract additional capital as needed, but also for earnings comparable to those of other companies having corresponding risks.")

[1708] *See supra*, this Section, for a discussion of risk-adjusted cost of capital.

elements would violate the requirements of sections 251(c) and 252(d)(1) of the 1996 Act.

701. Possible accounting losses from the sale of interconnection and unbundled network elements using a reasonable forward-looking cost-based methodology do not necessarily indicate that incumbent LECs are being denied a "reasonable profit" under the statute. The use of a forward-looking, economic, cost-based pricing methodology, including a reasonable allocation of legitimate joint and common costs, will permit incumbent LECs the opportunity to earn a reasonable return on their investment in network elements. Finally, contrary to PacTel's argument, and as discussed below in detail, we conclude that our forward-looking cost-based pricing methodology is consistent with the Fifth Amendment and is not confiscatory.

702. Based on the current record, we conclude that the currently authorized rate of return at the federal or state level is a reasonable starting point for TELRIC calculations, and incumbent LECs bear the burden of demonstrating with specificity that the business risks that they face in providing unbundled network elements and interconnection services would justify a different risk- adjusted cost of capital or depreciation rate. These elements generally are bottleneck, monopoly services that do not now face significant competition. We recognize that incumbent LECs are likely to face increased risks given the overall increases in competition in this industry, which generally might warrant an increased cost of capital, but note that, earlier this year, we instituted a preliminary inquiry as to whether the currently authorized federal 11.25 percent rate of return is too high given the current marketplace cost of equity

and debt.[1709] On the basis of the current record, we decline to engage in a time-consuming examination to determine a new rate of return, which may well require a detailed proceeding. States may adjust the cost of capital if a party demonstrates to a state commission that either a higher or lower level of cost of capital is warranted, without that commission conducting a "rate-of-return or other rate based proceeding."[1710] We note that the risk-adjusted cost of capital need not be uniform for all elements. We intend to re-examine the issue of the appropriate risk-adjusted cost of capital on an ongoing basis, particularly in light of the state commissions' experiences in addressing this issue in specific situations.

703. We disagree with the conclusion that, when there are mostly sunk costs, forward-looking economic costs should not be the basis for pricing interconnection elements. The TELRIC of an element has three components, the operating expenses, the depreciation cost,[1711] and the appropriate risk-adjusted cost of capital. We conclude that an appropriate calculationof TELRIC will include a depreciation rate that reflects the true changes in economic value of an asset and a cost of capital that appropriately reflects the risks incurred by an investor. Thus, even in the presence of sunk costs, TELRIC-based prices are an appropriate pricing methodology.

[1709] *See Common Carrier Bureau Sets Pleading Schedule in Preliminary Rate of Return Inquiry*, Public Notice, 11 FCC Rcd 3651 (Com. Car. Bur. 1996).

[1710] 47 U.S.C. § 252(d)(1)(A)(i).

[1711] Depreciation is the method of recognizing as an expense the cost of a capital investment. Properly calculated economic depreciation is a periodic reduction in the book value of an asset that makes the book value equal to its economic or market value.

(b) Cost Measures Not Included in Forward-Looking Cost Methodology

704. *Embedded Costs.* We read section 252(d)(1)(A)(i) to prohibit states from conducting traditional rate-of-return or other rate-based proceedings to determine rates for interconnection and access to unbundled network elements. We find that the parenthetical, "(determined without reference to a rate-of- return or other rate-based proceeding),"[1712] does not further define the type of costs that may be considered, but rather specifies a type of proceeding that may not be employed to determine the cost of interconnection and unbundled network elements. The legislative history demonstrates that Congress was eager to set in motion expeditiously the development of local competition and intended to avoid imposing the costs and administrative burdens associated with a traditional rate case. Prior to the joint conference, the Senate version of the 1996 Act contained the parenthetical language.[1713] In addition, the Senate version of the 1996 Act eliminated rate-of-return regulation,[1714]

[1712] 47 U.S.C. § 252(d)(1)(A)(i).

[1713] S. 652, 104th Cong., 1st Sess. s 251(d)(6)(A) (1995) ("the charge (A) shall be (i) based on the cost (determined without reference to a rate-of-return or other rate-based proceeding) of providing the unbundled element ....").

[1714] *Id.* at s 301(a)(3) ("Rate of Return Regulation Eliminated -- (A) In instituting the price flexibility required under paragraph (1) the Commission and the States shall establish alternative forms of regulation for Tier 1 telecommunications carriers that do not include regulation of the rate of return earned by such carrier....").

as did the House version.[1715] Conferees removed the provisions eliminating rate-of-return regulation, but retained the parenthetical.

705. Section 252(d)(1)(A)(i) does not specify whether historical or embedded costs should be considered or whether only forward-looking costs should be considered in setting arbitrated rates. We are not persuaded by incumbent LEC arguments that prices for interconnection and unbundled network elements must or should include any difference between the embedded costs they have incurred to provide those elements and their current economic costs. Neither a methodology that establishes the prices for interconnection and access to network elements directly on the costs reflected in the regulated books of account, nor a price based on forward looking costs plus an additional amount reflecting embedded costs, would be consistent with the approach we are adopting. The substantial weight of economic commentary in the record suggests that an "embedded cost"-based pricing methodology would be pro-competitor -- in this case the incumbent LEC -- rather than pro-competition.[1716] We therefore decline to adopt

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[1715] H.R. 1555, 104th Cong., 1st Sess. s 248(b) (1995) ("Abolition of Rate-of-Return Regulation -- Notwithstanding any other provision of law, to the extent that a carrier has complied with sections 242 and 244 of this part, the Commission, with respect to rates for interstate or foreign communications, and State commissions, with respect to rates for intrastate communications, shall not require rate-of-return regulation.").

[1716] *See, e.g.*, Ad Hoc Telecommunications Users' Committee reply at Appendix A (Interconnection Pricing Standards for Monopoly Rate Elements in a Potentially Competitive Local Telecommunications Market), p.4; ALTS comments at Attachment B (Competitive Pricing of Interconnection, Unbundled Elements, and Collocation), pp.28-29; AT&T reply at Appendix B (Reply Affidavit of William J. Baumol, Janusz A. Ordover, and Robert D. Willig), pp.3-5; Competition Policy Institute (continued...)

embedded costs as the appropriate basis of setting prices for interconnection and access to unbundled elements. Rather, we reiterate that the prices for the interconnection and network elements critical to the development of a competitive local exchange should be based on the pro- competition, forward-looking, economic costs of those elements, which may be higher or lower than historical embedded costs. Such pricing policies will best ensure the efficient investment decisions and competitive entry contemplated by the 1996 Act, which should minimize the regulatory burdens and economic impact of our decisions on small entities.[1717]

706. Incumbent LECs contend generally that, in order to ensure they will recover their total investment costs and earn a profit, they must recover embedded costs. These costs, they argue, were incurred under federal and regulatory oversight and therefore should be recoverable.[1718] We are not convinced by the incumbent LECs' principal arguments for recognizing embedded cost in setting section 251 pricing rules. Even if the incumbent LECs' contention is correct, increasing the rates for interconnection and unbundled elements offered to competitors would interfere with the development of efficient competition, and is not the proper remedy for any past under- depreciation. Moreover, contrary to assertions bysome incumbent LECs, regulation does not and should not guarantee full recovery of their embedded costs. Such a guarantee would exceed the

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[1716] (...continued)
comments at 18-19; DJ comments at 30-31.

[1717] *See* Regulatory Flexibility Act, 5 U.S.C. §§ 601 *et seq.*

[1718] *See, e.g.*, Ameritech reply at 31; BellSouth comments at 57; Lincoln Tel. comments at 16-17.

assurances that we or the states have provided in the past.[1719] We have considered the economic impact of precluding recovery of small incumbent LECs' embedded costs.[1720] We do not believe that basing the prices of interconnection and unbundled elements on an incumbent LEC's embedded costs would advance the pro-competitive goals of the statute. We also note that certain small incumbent LECs are not subject to our rules under section 251(f)(1) of the 1996 Act, unless otherwise determined by a state commission, and certain other small incumbent LECs may seek relief from their state commissions from our rules under section 251(f)(2) of the 1996 Act.[1721]

707. We acknowledge that some incumbent LECs may have incurred certain embedded costs reasonably before the passage of the 1996 Act, based on different regulatory regimes. Some incumbent LECs may assert that they have made certain historical investments required by regulators that they have been denied a reasonable opportunity to recover in the past and that the incumbent LECs may no longer have a reasonable opportunity to recover in the new environment of the 1996 Act. The record before us, however, does not support the conclusion that significant residual embedded costs will necessarily result from the availability of network elements at economic costs. To the extent that any such residual consists of costs of meeting universal service obligations, the recovery of such costs can and should be considered in our ongoing

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[1719] *See In the Matter of the Applications of Pacific Bell*, Order and Authorization, 10 FCC Rcd 12448, 12502-12503 (1995).

[1720] *See* Regulatory Flexibility Act, 5 U.S.C. §§ 601 *et seq*.

[1721] 47 U.S.C. § 251(f).

universal service proceeding.[1722] To the extent a significant residual exists within the interstate jurisdiction that does not fall within the ambit of section 254, we intend that to address that issue in our upcoming proceeding on access reform.

708. *Opportunity Cost -- Efficient Component Pricing Rule.* A number of incumbent LECs advocate using the "efficient component pricing rule" (ECPR) to set the prices that incumbent LECs charge new entrants for inputs required to produce the same retail services the incumbent produces. Under the ECPR, the price of an input should be equal to the incremental cost of the input plus the opportunity cost that the incumbent carrier incurs when the new entrant provides the services instead of the incumbent. The opportunity cost, which is computed as revenues less all incremental costs, represents both profit and contribution to common costs of the incumbent, given the existing retail prices of the services being sold.

709. We conclude that ECPR is an improper method for setting prices of interconnection and unbundled network elements because the existing retail prices that would be used to compute incremental opportunity costs under ECPR are not cost-based. Moreover, the ECPR does not provide any mechanism for moving prices towards competitive levels; it simply takes prices as given. The record indicates that both incumbents and new entrants agree that retail prices are not based on costs. Incumbents generally argue that local residential retail prices are below costs while new entrants contend that they exceed competitive levels.[1723] In either case, application of ECPR would result in input prices that would be either higher or lower than those which would be generated in

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[1722] *See Universal Service* NPRM at para. 32.

[1723] *See, e.g.*, Ameritech comments at 62.

a competitive market and would not lead to efficient retail pricing.

710. In markets where retail prices exceed competitive levels, entry would take place if network element prices were set at efficient competitive levels. The ECPR, however, will serve to discourage competition in these very markets because it relies on the prevailing retail price in setting the price which new entrants pay the incumbent for inputs. While ECPR establishes conditions for efficient entry given existing retail prices, as its advocates contend, the ECPR provides no mechanism that will force retail prices to their competitive levels. We do not believe that Congress envisioned a pricing methodology for interconnection and network elelments that would insulate incumbent LECs' retail prices from competition. Instead, Congress specifically determined that input prices should be based on costs because this would foster competition in the retail market. Therefore, we reject the use of ECPR for establishing prices for interconnection and unbundled elements.

711. As discussed above, the record in this docket shows that end user prices are not cost-based. In *Open Video Systems*, in contrast, we did not find that there would be a problem with the determination of end user prices.[1724] We concluded that "[u]se of [an ECPR] approach is appropriate in circumstances where the pricing is applicable [sic] to a new market entrant (the open video system operator) that will face competition from an existing incumbent provider (the incumbent cable operator), as opposed to circumstances where the pricing is used to establish a rate for an essential input service that is charged to a competing new entrant by an

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[1724] *Implementation of Section 302 of the Telecommunications Act of 1996 -- Open Video Systems*, CS Docket No. 96-46, Second Report and Order, FCC 96-249 (rel. June 3, 1996) *(Open Video Systems)*.

incumbent provider."[1725] In addition, in *Open Video Systems*, we concluded that the ECPR is appropriate because it encourages entry for open video system operators and also enhances the availability of carriage for unaffiliated programmers.[1726] The ECPR generally protects the provider's profits and provides opportunities for third parties to use the provider's inputs. The ECPR does not provide a mechanism to drive retail prices to competitive levels, however. In *Open Video Systems*, we wanted to encourage entry by open video system providers and to encourage them to have incentives to open their systems to unaffiliated programmers. Here, our goal is to ensure that competition between providers, including third party providers using interconnection and unbundled elements, will drive prices toward competitive levels and thus use of the ECPR is inappropriate.

712. *Universal Service Subsidies*. We conclude that funding for any universal service mechanisms adopted in the universal service proceeding may not be included in the rates for interconnection, network elements, and access to network elements that are arbitrated by the states under sections 251 and 252. Sections 254(d) and 254(e) of the 1996 Act mandate that universal service support be recovered in an equitable and nondiscriminatory manner from all providers of telecommunications services.[1727] We conclude that permitting states to include such costs in rates arbitrated under sections 251 and 252 would violate that requirement by requiring

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[1725] Id at 127.

[1726] *Id.*

[1727] Joint Explanatory Statement at 131 ("In keeping with the conferees' intent that universal service support should be clearly identified, [section 254(e)] states that such support should be made explicit ...").

carriers to pay specified portions of such costs solely because they are purchasing services and elements under section 251. Section 252(d)(1) requires that rates for interconnection, network elements, and access to network elements reflect the costs of providing those network elements, not the costs of supporting universal service.

713. Section 254(f) provides that a state may adopt equitable, nondiscriminatory, specific, and predictable mechanisms to advance universal service within that state.[1728] If a state collects universal service funding in rates for elements and services pursuant to sections 251 and 252, it will be imposing non-cost based charges in those rates. Including non-cost based charges in the rates for interconnection and unbundled elements is inconsistent with our rules implementing sections 251 and 252 which require that these rates be cost-based. It is also inconsistent with the requirement of section 254(f) that telecommunications carriers contribute to state universal service on a nondiscriminatory basis, because telecommunications carriers requesting interconnection or access to unbundled network elements will be required to make contributions to universal service support through such surcharges.[1729] States may not, therefore, include universal service support funding in the rates for elements and services pursuant to sections 251 and 252, nor may they implement mechanisms that have the same effect. For example, states may not fund universal service support by imposing higher rates for interconnection, unbundled elements, or transport and termination on carriers that offer service to different types of customers or different geographic areas. To the extent that New York's "pay or play" system funds universal service in this

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[1728] 47 U.S.C. § 254(f).

[1729] *See infra*, Section VII.D.3., discussing discrimination.

manner, it violates sections 251, 252, and 254 of the 1996 Act. Nothing in the 1996 Act or in this Order, however, precludes a state from adopting a universal service funding mechanism, whether interim or otherwise, if such funds are collected in accordance with section 254(f) on an "equitable and nondiscriminatory basis" through "specific, predictable, and sufficient mechanisms that do not rely on or burden Federal universal service support mechanisms."[1730]

714. Our decision here does not exempt carriers purchasing elements or services under section 251 from contributing to (or possibly receiving) universal service support. Rather, the recovery of universal service support costs from telecommunications carriers, including carriers requesting unbundled network elements, will be governed by section 254 of the 1996 Act. Federal universal service support mechanisms will be determined by our decisions reached in CC Docket 96-45, based on the recommendations of the Federal/State Universal Service Joint Board, and states may adopt additional universal service support mechanisms consistent with section 254(f).

715. We are mindful that the requirements of the 1996 Act may be disruptive to existing state universal service support mechanisms during the period commencing with this order and continuing until we complete our universal service proceeding to implement section 254. As discussed in the subsection immediately below, we permit incumbent LECs to continue to recover certain non- cost-based interstate access charge revenues for a limited period of time, largely because of concerns about possible deleterious impacts on universal service. We also authorize incumbent LECs, for a similar limited period of time, to continue to recover explicit intrastate

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[1730] 47 U.S.C. § 254(f).

universal service subsidy revenues based on intrastate access charges. This mechanism minimizes any possibility that implementation of sections 251 and 252 will unduly harm universal service during the interim period prior to completion of our universal service and access reform proceedings. Because we conclude this action should adequately provide for the continuation of a portion of existing subsidy flows during a transition period until completion of our proceeding implementing section 254, we decline to permit any additional funding of universal service support through rates for interconnection, unbundled elements, and transport and termination during the interim period.

716. *Interim Application of Access Charges to Purchasers of Unbundled Local Switching Element.* In the introduction of this Order, we emphasize that implementation of section 251 of the 1996 Act is integrally related to both universal service reform as required under section 254, and to reform of the interstate access charge system.[1731] In order to achieve pro-competitive, deregulatory markets for all telecommunications services, we must create a new system of funding universal service that is specific, explicit, predictable, sufficient, and competitively neutral. We also must move access charges to more cost-based and economically efficient levels. We intend to fulfill both of these goals in the coming months, by completing our pending universal service proceeding to implement section 254 by our statutory deadline of May 1997, and by addressing access charge issues in an upcoming access reform proceeding. The 1996 Act, however, requires us to adopt rules implementing section 251 by August 1996. We are concerned that implementation of the requirements of section 251 now, without taking into account

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[1731] *See supra*, Section I.B.

the effects of the new rules on our existing access charge and universal service regimes, may have significant, immediate, adverse effects that were neither intended nor foreseen by Congress.

717. Specifically, as we conclude above, the 1996 Act permits telecommunications carriers that purchase access to unbundled network elements from incumbent LECs to use those elements to provide telecommunications services, including the origination and termination of interstate calls. Without further action on our part, section 251 would allow entrants to use those unbundled network facilities to provide access services to customers they win from incumbent LECs, without having to pay access charges to the incumbent LECs. This result would be consistent with the long term outcome in a competitive market. In the short term, however, while other aspects of our regulatory regime are in the process of being reformed, such a change may have detrimental consequences.

718. The access charge system includes non-cost-based components and elements that at least in part may represent subsidies, such as the carrier common line charge (CCLC) and the transport interconnection charge (TIC). The CCLC recovers part of the allocated interstate costs for incumbent LECs to provide local loops to end users. In the universal service NPRM, we observed that the CCLC may result in higher-volume toll users paying rates that exceed cost, and some customers paying rates that are below cost. We sought comment on whether that subsidy should be continued, and on whether and how it should be restructured.[1732] The nature of most of the revenues recovered through the TIC is unclear and subject to dispute, although a portion of the TIC is associated with certain costs related to particular transport

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[1732] *Universal Service* NPRM at paras. 113-14.

facilities. Although the TIC was not created to subsidize local rates, some parties have argued in the *Transport* proceeding and elsewhere that some portion of the revenues now recovered through the TIC may be misallocated local loop or intrastate costs that operate to support universal service.[1733] In the forthcoming access reform proceeding, we intend to consider the appropriate disposition of the TIC, including the development of cost-based transport rates as directed by the United States Court of Appeals for the District of Columbia Circuit in *Competitive Telecommunications Association v. FCC* (*CompTel v. FCC*).[1734]

719. Without a temporary mechanism such as the one we adopt below, the implementation of section 251 would permit competitive local service providers that also provide interstate long-distance service to avoid totally the CCLC and the TIC, which in part represent contributions toward universal service, by serving their local customers solely through the use of unbundled network elements rather than through resale. We believe that allowing such a result before we have reformed our universal service and access charge regimes would be undesirable as a matter of both economics and policy, because carrier decisions about how to interconnect with incumbent LECs would be driven by regulatory distortions in our access charge rules and our universal service scheme, rather than the

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[1733] *Transport Rate Structure and Pricing*, CC Docket No. 91-213, Report and Order and Further Notice of Proposed Rulemaking, 7 FCC Rcd 7006, 7065-7066 (1992) *(First Transport Order)*. *Cf.* Letter from Bruce K. Cox, Government Affairs Director, AT&T, to William F. Caton, Acting Secretary, FCC, September 7, 1995 (filed in CC Docket No. 91-213) (suggesting that TIC revenues not allocable to specific transport facilities may represent misallocated common line costs).

[1734] *Competitive Telecommunications Association v. FCC*, No. 96-1168 (D.C. Cir. July 5, 1996).

unfettered operation of a competitive market. Because of our desire to err on the side of caution where universal service may be implicated, we conclude that some action is needed during the interim period before we complete our access reform and universal service proceedings.

720. We conclude that we should establish a temporary transitional mechanism to help complete all of the steps toward the pro-competitive goal of the 1996 Act, including the implementation of a new, competitively-neutral system to fund universal service and a comprehensive review of our system of interstate access charges. Therefore, for a limited period of time, incumbent LECs may recover from interconnecting carriers the CCLC and a charge equal to 75 percent of the TIC for all interstate minutes traversing the incumbent LECs' local switches for which the interconnecting carriers pay unbundled local switching element charges. Incumbent LECs may recover these charges only until the earliest of: (1) June 30, 1997; (2) the effective date of final decisions by the Commission in both the universal service and access reform proceedings; or (3) if the incumbent LEC is a BOC, the date on which that BOC is authorized under section 271 of the 1996 Act to offer in-region interLATA service. The end date for BOCs that are authorized to offer interLATA service shall apply only to the recovery of access charges in those states in which the BOC is authorized to offer such service.

721. We tentatively concluded in the NPRM that purchasers of unbundled network elements should not be required to pay access charges. We reaffirm our conclusion above in our discussion of unbundled network elements that nothing on the face of sections 251(c)(3) and 252(d)(1) compels telecommunications carriers that use unbundled elements to pay these charges, nor limits these carriers' ability to use unbundled elements to originate or terminate interstate calls, and that

payment of rates based on TELRIC plus a reasonable allocation of common costs, pursuant to section 251(d)(1), represents full compensation to the incumbent LEC for use of the network elements that telecommunications carriers purchase. Because of the unique situation described in the preceding paragraphs, however, we conclude, contrary to our proposal in the NPRM, that during a time-limited period, interconnecting carriers should not be able to use unbundled elements to avoid access charges in all cases. As detailed below, this temporary mechanism will apply only to carriers that purchase the local switch as an unbundled network element, and use that element to originate or terminate interstate traffic.[1735] We are applying these transitional charges to the unbundled local switching element, rather than to any other network elements, because such an approach is most closely analogous to the manner in which the CCLC and TIC are recovered in the interstate access regime. Currently, the CCLC and TIC apply to interstate switched access minutes that traverse incumbent LECs' local switches. Applying the CCLC and 75 percent of the TIC to the unbundled local switching element is consistent with our goal of minimizing disruptions while we reform our universal service system and consider changes to our access charge mechanisms. Moreover, the CCLC and the TIC are recovered on a per-minute basis, and the local switch is the primary point at which incumbent LECs are capable of recording interstate minutes for traffic associated with end user customers of requesting carriers.

722. We have crafted this short-term continuation of certain access charge revenue flows to minimize the possibility

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[1735] As discussed *infra*, carriers that choose to enter a local market through resale of an incumbent LEC's intrastate local exchange service will pay interstate and intrastate access charges to originate and terminate toll traffic for end user customers that purchase that resold local exchange service.

that incumbent LECs will be able to "double recover" through access charges the facility costs that new entrants have already paid to purchase unbundled elements. For that reason, we do not permit incumbent LECs to assess on purchasers of the unbundled local switching element any interstate access charges other than the CCLC and 75 percent of the TIC. The other access charges are all designed to recover the cost of particular facilities involved in the provision of interstate access services, such as local switching, dedicated interoffice transport circuits, and tandem switching. Imposition of these facility-based access charges in addition to the cost-based charges for comparable network elements established under Section 252 could result in double recovery. The mechanism we establish will ensure that incentives created by non-cost-based elements of access charges do not result in harmful consequences prior to completion of access reform and our universal service proceeding. Imposition of additional access charges is therefore not necessary. We note that this mechanism serves to minimize the potentially disruptive effects of our decisions on incumbent LECs, including small incumbent LECs.[1736]

723. For the same reason, we permit incumbent LECs to recover only 75 percent of the TIC. Some portion of the TIC recovers revenues associated with specific transport facilities. To the extent that these costs can be identified clearly, they should not be imposed on new entrants through the TIC. Incumbent LECs will be fully compensated for any transport facilities that new entrants purchase from them through the unbundled element rates states establish under 252(d)(1), which, as we have stated, must be based on economic cost rather than access charges. In our interim transport rate restructuring, we explicitly set the initial tandem switching rate

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[1736] *See* Regulatory Flexibility Act, 5 U.S.C. §§ 601 *et seq.*

at 20 percent of the interstate revenue requirement, with the remainder included in the TIC.[1737] In addition, certain costs of upgrading incumbent LEC networks to support SS7 signaling were allocated to transport through then-existing separations procedures. In our interim transport rate restructuring, we did not create any facility-based charges to recover these costs,[1738] so the associated revenues presumably were incorporated into the TIC. There may also be other revenues associated with transport facilities that are recovered today through the TIC. While we are uncertain of the precise magnitude of these revenues, in our best judgment, based on the record in the *Transport* proceeding and other information before us, we find that it is likely that these revenues approach, but probably do not exceed 25 percent of the TIC for most incumbent LECs. Thus, we believe that 25 percent is a conservative amount to exclude from the TIC to ensure that incumbent LECs do not double recover revenues associated with transport facilities from new entrants. Moreover, the Court in *CompTel v. FCC* remanded our *Transport* decision, in part, because of the inclusion of tandem switching revenues in the TIC rather than in the rate element for tandem switching. We find that excluding 25 percent of the TIC represents a reasonable exercise of our discretion to prevent revenues associated with the tandem switching revenue requirement from being recovered from purchasers or unbundled local switching.

724. We strongly emphasize that these charges will apply to purchasers of the unbundled switching element only for a very limited period, to avoid the possible harms that might arise if we were to ignore the effects on access charges and universal service of implementation of section 251. BOCs shall

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[1737] *First Transport Order*, 7 FCC Rcd at 7019.

[1738] *First Transport Order*, 7 FCC Rcd at 7019.

not be permitted to recover these revenues once they are authorized to offer in- region interLATA service, because at that time the potential loss of access charge revenues faced by a BOC most likely will be able to be offset by new revenues from interLATA services. Moreover, although we do not prejudge the conditions necessary to grant BOC petitions under section 271 to offer in- region interLATA service, we do decide that BOCs should not be able to charge the CCLC and the TIC, which are not based on forward-looking economic costs, to competitors that use unbundled elements under section 251 once they are authorized to provide in-region interLATA service. Only BOCs are subject to special restrictions in the 1996 Act to ensure that their entry into the in- region interLATA market does not have an adverse impact on competition. We conclude that this additional trigger date after which BOCs may not continue to receive access charges from purchasers of unbundled local switching is consistent with this Congressional design.

725. We have selected June 30, 1997 as an ultimate end date for this transitional mechanism to coincide with the effective date for LEC annual access tariffs, and because we believe it is imperative that this transitional requirement be limited in duration. We can conceive of no circumstances under which the requirement that certain entrants pay the CCLC or a portion of the TIC on calls carried over unbundled network elements would be extended further. The fact that access or universal service reform have not been completed by that date would not be a sufficient justification, nor would any actual or asserted harm to the financial status of the incumbent LECs. By June 30, 1997, the industry will have had sufficient time to plan for and adjust to potential revenue shifts that may result from competitive entry. Thus, the economic impact of our decision

on competitive local service providers, including those that are small entities, should be minimized.[1739]

726. We believe that we have ample legal authority to implement this temporary transitional measure, and we find that this approach is consistent with the letter and spirit of the 1996 Act. We recognize that the CCLC and TIC have not been developed in accordance with the pricing standards of section 252(d)(1), and that to comply with the 1996 Act, the rates that states establish for interconnection and unbundled network elements may not include non-cost-based amounts or subsidies. The 1934 and 1996 Acts do, however, give us legal authority to determine, for policy reasons, that users of LEC facilities should pay certain access charges for a period of time.[1740] Section 4(i) of the 1934 Act authorizes the Commission to "perform any and all acts ... not inconsistent with this Act, as may be necessary in the execution of its functions."[1741] Given the extraordinary upheaval in the industry's structure set in motion by the 1996 Act, and the specific concerns described above, we believe that a temporary mechanism is necessary in order to ensure that the policy goals underlying the access charge system and the Communications Act itself are not undermined. Further, we believe section 251(g) of the 1996 Act lends support to our decision. As discussed above, section 251(g) does not require that incumbent LECs continue to receive access charge revenues when telecommunications

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[1739] *See* Regulatory Flexibility Act, 5 U.S.C. §§ 601 *et seq*.

[1740] *See, e.g., New England Tel. and Tel. Co. v. FCC*, 826 F.2d 1101 (D.C. Cir 1987); *North American Telecommunications Association v. FCC*, 772 F.2d (7th Cir. 1085); *Lincoln Tel. and Tel. Co. v. FCC*, 659 F.2d (D.C. Cir. 1989).

[1741] 47 U.S.C. § 4(i).

carriers use unbundled incumbent LEC network elements to originate and terminate interstate traffic. That section does, however, provide evidence of Congressional recognition of the potential tension between existing interconnection obligations, such as access charges, and the new methods of interconnection mandated by section 251, and therefore supports our decision to create a limited-duration mechanism to address this tension.

727. The decision of the court in *CompTel v. FCC* to remand our decision to adopt the TIC is not inconsistent with this approach. The Court's concern stemmed, in part, from the inclusion of a portion of the interstate tandem switching revenue requirement in the TIC. We have excluded from the charges that purchasers of unbundled local switching must pay a percentage of the TIC that, at a minimum, includes these allocated tandem switching revenues from the transitional charges that incumbent LECs may assess on IXCs.[1742] Furthermore, the Court directed the Commission to develop a cost-based transport rate structure, or to explain why it chose not to do so.[1743] We intend to fulfill this obligation in the forthcoming access reform proceeding. The charge equal to 75 percent of the TIC will be applied only as an interim measure for a brief, clearly-identified period, until that restructuring of access charges is completed. The court expressly acknowledged that the 1996 Act would have implications for the access charge system.[1744] For the reasons described above,

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[1742] As discussed above, we estimate that the tandem switching, SS7, and other costs associated with transport facilities now recovered through the TIC likely do not exceed 25% of the TIC for most incumbent LECs.

[1743] *Competitive Telecommunications Association v. FCC*, No. 96-1168 at 26- 27.

[1744] Id at 12-13.

we conclude that these effects necessitate temporary application of a portion of the TIC to entrants that win end user customers from LECs, and that purchase the local switch as an unbundled element to originate and terminate interstate and intrastate toll traffic for such end users. In the access reform proceeding, we intend to determine the appropriate disposition for these revenues. Until we have had the opportunity to do so, however, we permit incumbent LECs to recover a transitional charge equal to 75 percent of the TIC under the limited circumstances described herein.

728. The interim mechanism we establish here differs from the waiver relief we have previously granted to NYNEX and Ameritech to permit them to recover certain interstate access charge revenues through "bulk billing" of revenues to all interstate switched access customers.[1745] Those orders responded to waiver requests filed prior to the passage of the 1996 Act. Our responsibility in those proceedings was to determine whether special circumstances existed, and whether the specific relief requested better served the public interest than continued application of our general rules. By contrast, the action we take today addresses industry-wide issues that arise from the new regime put into place by section 251 of the 1996 Act, which allows states to establish unbundled network element rates that recover the full unseparated cost of elements. Our response to the Ameritech and NYNEX waiver petitions

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[1745] *See The NYNEX Tel. Cos. Petition for Waiver, Transition Plan to Preserve Universal Service in a Competitive Environment,* Memorandum Opinion and Order, 10 FCC Rcd 7445 (1995), *reconsideration pending (NYNEX USPP Order); Ameritech Operating Companies Petition for a Declaratory Ruling and Related Waivers to Establish a New Regulatory Model for the Ameritech Region,* Order, FCC 96-58 (released Feb. 15, 1996) *(Ameritech Customers First Order).*

does not, simply because those petitions also concerned access charge recovery, constrain our decision in this proceeding.

729. It would be unreasonable to provide such a transitional mechanism on the federal level, but to deny similar authority to the states. Therefore, states may continue existing explicit universal service support mechanisms based on intrastate access charges for an interim period of a similar brief, clearly- defined length. During that period, unless decided otherwise by the state, incumbent LECs may continue to recover such revenues from purchasers of unbundled local switching elements that use those elements to originate or terminate intrastate toll calls for end user customers they win from incumbent LECs. States may terminate these mechanisms at any time. We define mechanisms based on intrastate access charges as those mechanisms that require purchasers of intrastate access services from incumbent LECs to pay non-cost-based charges for those access services on the basis of their intrastate access minutes of use.

730. We do not intend, however, that such a transitional mechanism eviscerate the requirements of sections 252 and 254, which, as we have stated, prohibit funding of universal service subsidies through rates for interconnection and unbundled network elements. Mechanisms such as New York's "pay or play" system, which would impose intrastate access charges on non-access services rather than allowing incumbent LECs to recover non-cost-based revenues from purchasers of access services, may not be included in this interim system. Such a result is justified because state "pay or play" mechanisms do not at present constitute a significant revenue stream to incumbent LECs, and therefore elimination of this mechanism is unlikely, in the short term, to have significant detrimental effects on universal service support.

731. These state mechanisms must end on the earlier of: (1) June 30, 1997; or (2) if the incumbent LEC that receives the transitional access charge revenues is a BOC, the date on which that BOC is authorized under section 271 of the 1996 Act to offer in-region interLATA service. With one exception, the analysis provided above as to the rationale for the end dates for the transitional interstate access charge mechanism applies here as well. Because our access reform proceeding focuses on federal charges, and because the full extent of the section 254 universal service mechanism remains to be determined in that proceeding, intrastate access charge-based universal service support mechanisms should not now be required to terminate upon the completion of those proceedings.

732. As with our decision to permit incumbent LECs to continue to receive certain interstate access charge revenues from some purchasers of unbundled local switching for a limited period of time, we believe our decision to allow states to preserve certain intrastate universal service support mechanisms based on access charges is within our authority under section 251(d)(1) of the 1996 Act, and section 4(i) of the 1934 Act. Moreover, although section 251(g) does not directly refer to intrastate access charge mechanisms, it would be incongruous to conclude that Congress was concerned about the effects of potential disruption to the interstate access charge system, but had no such concerns about the effects on analogous intrastate mechanisms.

(c) Fifth Amendment Issues

733. We conclude that our decision that prices for incumbent LECs' unbundled elements and interconnection offerings be based on forward-looking economic cost does not violate the incumbent LECs' rights under the Fifth Amendment of the Constitution. The Supreme Court has recognized that

public utilities owned and operated by private investors, even though their assets are employed in the public interest to provide consumers with service, may assert their rights under the Takings Clause of the Fifth Amendment.[1746] In applying the Takings Clause to rate setting for public utilities, the Court has stated that "[t]he guiding principle has been that the Constitution protects utilities from being limited to a charge for their property serving the public which is so 'unjust' as to be confiscatory."[1747]

734. The Supreme Court has held that the determination of whether a rate is confiscatory depends on whether that rate is just and reasonable, and not on what methodology is used.[1748] In *Federal Power Comm'n v. Hope Natural Gas Co.*, the Court upheld the Federal Power Commission's order that required the company to make a large reduction in wholesale gas rates. The commission based its determination of a reasonable rate of return on a plant valuation determined by using a historical cost methodology that was only half as large as the company's own valuation based on forward-looking reproduction costs. In its decision, the Court set forth the governing legal standard for determining whether a rate is constitutional:

[1746] The Fifth Amendment provides that, "private property [shall not] be taken for public use, without just compensation." U.S. Const. amend. V. *See Duquesne Light Co. v. Barasch*, 488 U.S. 299, 307 (1989) *(Duquesne)*.

[1747] *Duquesne*, 488 U.S. at 307 *(citing Covington & Lexington Turnpike Road Co. v. Sandford*, 164 U.S. 578, 597 (1896)).

[1748] *Hope Natural Gas*, 320 U.S. at 602-603; *see also Duquesne; In re Permian Basin Area Rate Cases*, 390 U.S. 747 (1968); *Federal Power Commission v. Memphis Light, Gas & Water Division*, 411 U.S. 458 (1973); *Jersey Central Power & Light v. FERC*, 810 F.2d 1168 (D.C. Cir. 1987).

> Under the statutory standard of "just and reasonable" it is the result reached not the method employed that is controlling. It is not the theory but the impact of the rate order which counts. If the total effect of the rate order cannot be said to be unjust and unreasonable, judicial inquiry under the Act is at an end. The fact that the method employed to reach that result may contain infirmities is not then important.[1749]

735. The Court went on to explain that, in determining whether a rate is reasonable, the regulatory body must balance the interests of both the investor and consumer.[1750] "From the investor or company point of view, it is important that there be enough revenue not only for operating expenses but also for the capital costs of the business .... [T]he return on the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks."[1751]

736. Under sections 251(c)(2) and (3) of the 1996 Act, incumbent LECs must establish rates for interconnection and unbundled elements that are just and reasonable.[1752] In adopting the rules that govern those rates, under *Hope Natural Gas* we must consider whether the end result of incumbent LEC rates is just and reasonable. Incumbent LECs argue that establishing a rate structure that does not permit recovery of historical or embedded costs is confiscatory. We disagree. As stated above, the Court has consistently held since *Hope*

[1749] *Hope Natural Gas*, 320 U.S. at 602.

[1750] *Id.*

[1751] *Id.* at 603.

[1752] 47 U.S.C. § 251(c)(2) and (3).

Natural Gas that it is the end result, not the method used to achieve that result, that is the issue to be addressed.[1753] Indeed, the Court has found that the "fixing of prices, like other applications of the police power, may reduce the value of the property which is being regulated. But the fact that the value is reduced does not mean that the regulation is invalid."[1754] Moreover, the Court has upheld as reasonable changes in ratemaking methodology when the change resulted in the exclusion of historical costs prudently incurred.[1755] Thus, the mere fact that an incumbent LEC may not be able to set rates that will allow it to recover a particular cost incurred in establishing its regulated network does not, in and of itself, result in confiscation.

737. Moreover, *Hope Natural Gas* requires only that the end result of our overall regulatory framework provides LECs a reasonable opportunity to recover a return on their investment. In other words, incumbent LECs' overall rates must be considered, including the revenues for other services under our jurisdiction.[1756]

738. In this proceeding, we are establishing pricing rules that should produce rates for monopoly elements and services that approximate what the incumbent LECs would be able to charge if there were a competitive market for such offerings. We believe that a forward-looking economic cost

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[1753] *See, e.g., Duquesne,* 488 U.S. at 310; *Hope Natural Gas,* 320 U.S. at 602.

[1754] *Hope Natural Gas,* 320 U.S. at 601.

[1755] *Duquesne,* 488 U.S. at 301-302.

[1756] However, we may not consider incumbent LECs' revenue derived from services not under our jurisdiction. *Smith v. Ill. Bell,* 282 U.S. 133 (1930).

methodology enables incumbent LECs to recover a fair return on their investment, *i.e.*, just and reasonable rates. The record does not compel a contrary conclusion. No incumbent LEC has provided persuasive evidence that prices based on a forward-looking economic cost methodology would have a significant impact on its "financial integrity." We further note that at least one federal appellate court has held incremental cost-based pricing constitutional.[1757]

739. Incumbent LECs may seek relief from the Commission's pricing methodology if they provide specific information to show that the pricing methodology, as applied to them, will result in confiscatory rates. We also do not completely foreclose the possibility that incumbent LECs will be afforded an opportunity to recover, to some extent, their embedded costs through a mechanism separate from rates for interconnection and unbundled network elements. As stated above, we intend to explore this issue in detail in our upcoming access reform proceeding.

740. GTE argues that the proper standard to review our ratemaking methodology is the just compensation standard generally reserved for takings of property. This is in effect a contention that the 1996 Act's physical collocation and unbundled network facility requirements constitute physical occupation of their property that should be deemed a taking and that must be subject to "just compensation." Assuming for the sake of argument that the physical collocation and unbundled facilities requirements do result in a taking, we nevertheless find that the ratemaking methodology we have adopted satisfies the just compensation standard. Just compensation is normally measured by the fair market value of the property subject to the

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[1757] *Metropolitan Transp. Auth. v. Interstate Commerce Commission*, 792 F.2d 287, 297 (2d Cir.), *cert. denied*, 479 U.S. 1017 (1986).

taking.[1758] Just compensation is not, however, intended to permit recovery of monopoly rents.[1759] The just and reasonable rate standard of TELRIC plus a reasonable allocation of the joint and common costs of providing network elements that we are adopting attempts to replicate, with respect to bottleneck monopoly elements, the rates that would be charged in a competitive market,[1760] and, we believe, is entirely consistent with the just compensation standard. Indeed, a similar rate methodology based on incremental costs has been found to satisfy the just compensation requirement.[1761] For these reasons, we conclude that, even if the 1996 Act's physical collocation and unbundled network facility requirements constitute a taking, a forward-looking economic cost methodology satisfies the Constitution's just compensation standard.

[1758] *See, e.g., United States v. Miller*, 317 U.S. 369, 374 (1943) (holding that just compensation can readily be set by ascertaining the property's fair market value, *i.e.*, "what a willing buyer would pay in cash to a willing seller").

[1759] *See, e.g., Lord Mfg. Co. v. United States*, 84 F.Supp. 748, 755-56 (Ct.Cl. 1949), *citing United States v. Cors*, 337 U.S. 325, 334 (1949).

[1760] Compare *Policy and Rules Concerning Rates for Dominant Carriers*, Further Notice of Proposed Rulemaking, CC Docket No. 87-313, 3 FCC Rcd 3195, 3200-01 (1988).

[1761] *Metropolitan Transp. Auth. v. Interstate Commerce Commission*, 792 F.2d at 297.

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764. *Geographic Deaveraging.* The 1996 Act mandates that rates for interconnection and unbundled elements be "based on the cost ... of providing the interconnection of network elements."[1802] We agree with most parties that deaveraged rates more closely reflect the actual costs of providing interconnection and unbundled elements. Thus, we conclude that rates for interconnection and unbundled elements must be geographically deaveraged.

765. The record reflects that at least two states have implemented geographically-deaveraged rate zones.[1803] These rate zone pricing systems have generally included a minimum of three zones. In the *Expanded Interconnection* proceeding, the Commission also permitted LECs to implement a three zone structure.[1804] We conclude that three zones are presumptively sufficient to reflect geographic cost differences in setting rates for interconnection and unbundled elements, and that states

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[1802] 47 U.S.C. § 252(d)(1)(a)(i).

[1803] Connecticut Commission comments at 13; Illinois Commission comments at Attachment C (Illinois Commerce Commission Order), p.54, 60-61.

[1804] *Expanded Interconnection with Local Telephone Company Facilities and Amendment of the Part 69 Allocation of General Support Facility Costs*, CC Docket Nos. 91-141 and 92-222, Report and Order and Notice of Proposed Rulemaking, 7 FCC Rcd 7369, 7454-57 (1992) (*Expanded Interconnection Order*); Second Report and Order and Third Notice of Proposed Rulemaking, 8 FCC Rcd 7374, 7426-29 (1993). LEC central offices in areas with the highest traffic densities were assigned to Zone 1; offices in areas with intermediate degrees of density were assigned to Zone 2; and offices in areas with the lowest density were assigned to Zone 3.

may, but need not, use these existing density-related rate zones. Where such systems are not in existence, states shall create a minimum of three cost-related rate zones to implement deaveraged rates for interconnection and unbundled elements. A state may establish more than three zones where cost differences in geographic regions are such that it finds that additional zones are needed to adequately reflect the costs of interconnection and access to unbundled elements.

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790. In general, we believe that states should use a TELRIC methodology to establish geographically deaveraged, flat-rate charges for access to unbundled loops. As discussed above, however, we recognize that, in some cases, it may not be possible for carriers to prepare, or for state commissions to review, economic cost studies within the statutory time frame for arbitration proceedings. Because reviewing and approving such cost studies takes time and because many states have not yet begun, or have only recently begun, to develop and examine such studies, it is critical for the near-term development of local competition to have proxies that provide an approximation of forward-looking economic costs and can be used by states almost immediately. These proxies would be used by a state commission until it is able either to complete a cost study or to evaluate and adopt the results of a study or studies submitted in the record. In an NPRM to be issued shortly, we will investigate more fully various long-run incremental cost models in the record with an eye to developing a model that can be used to generate proxies for the forward looking economic costs of network elements. Until such time as we can develop such a model, we have developed the following default proxy ceilings

that state commissions that have not completed forward looking economic cost studies may use in the interim as an approximation to the forward looking cost of the local loop.

791. State commissions may use this proxy to derive a maximum (or ceiling) loop rate for each incumbent LEC operating within their state, and may establish actual unbundled loop rates at any level less than or equal to this maximum rate in specific arbitrations or other proceedings. Of course, we are encouraging states to have economic studies completed wherever feasible. Moreover, states will have to replace this proxy ceiling with the results of their own forward looking economic cost study or the results produced by a generic economic cost model that the Commission has approved.[1866]

792. We are adopting a proxy ceiling based on two cost models and rates for unbundled loops allowed by six states that had available to them the results of forward-looking economic cost studies at the time they considered either interim or permanent rates for the unbundled loop element. These states are Colorado, Connecticut, Florida, Illinois, Michigan, and Oregon. Each of these states has used a standard that appears to be reasonably close to the forward- looking economic cost methodology that we require to be used, although possibly not consistent in every detail with our TELRIC methodology.[1867]

[1866] *See infra*, Section VII.C.3., discussing generic cost models.

[1867] *See In re: US West Communications, Inc. Filing of Advice Letter No. 2610 In Compliance with Commission Decision No. C96-521 Adopting Emergency Rules (Tariff)*, Docket No. 96S-233T, Decision No. C96-655 (Colorado Commission, June 21,1996)["*Colorado Decision*"] at 58-64 (interim unbundled loop prices set after review of TSLRIC cost studies); *Re Southern New England Telephone Company*, Order No. 95-06-17, *1995 WL 803837 (Conn. D.P.U.C., December 20, 1995)* ["*Connecticut Decision*"] at 9-10, 72 (same); *In re: application of City Signal, Inc., for an*

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Generally, these states appear to have included an allocation of forward- locking common costs in their unbundled loop prices. The individual state studies resulted in the following average rates for unbundled local loops: Colorado, $18; Connecticut, $12.95; Florida, $17.28; Illinois, $10.93; Michigan, $10.03; and Oregon, $12.45, computed as set forth below.

793. The Colorado Commission set an interim rate of $18 per month for unbundled loops terminated at the main distribution

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[1867] (...continued)
order establishing and approving interconnection arrangements with Ameritech Michigan, Case No. U-10647 (Michigan Commission, February 23, 1995) ["*Michigan Decision*"] at 32, 56-57 (setting interim unbundled loop rates based on estimated TSLRIC costs); *In Re: Resolution of petition(s) to establish nondiscriminatory rates, terms and conditions for resale involving local exchange companies and alternative local exchange companies and alternative local exchanges companies pursuant to Section 364.161, Florida Statutes*, Docket No. 950984-TP, Order No. PSC-96-0444-FOF-TP, (Florida Commission, March 29, 1996)["*Florida Decision I*"] at 16 (interim unbundled loop prices set with reference to BellSouth cost studies); *In Re: Resolution of petition(s) to establish nondiscriminatory rates, terms and conditions for resale involving local exchange companies and alternative local exchange companies and alternative local exchanges companies pursuant to Section 364.161, Florida Statutes*, Docket No. 950981-TP, Order No. PSC-96- 0811-FOF-TP (Florida Commission, June 24, 1996)["*Florida Decision II*"] at 25- 26 (setting rates after review of GTE and United/Centel cost studies); *In re: Investigation into the Cost of Providing Telecommunications Services*, Order No. 96-188, (Oregon Commission, July19,1996)["*Oregon Decision*"] at 78 n.61 (interim unbundled loop prices generally based on LRIC estimates plus applicable group related costs, and an additional contribution for recovery of joint and common costs); *Illinois Bell Telephone Company Proposed introduction of a trial of Ameritech's Customers First Plan in Illinois*, Docket Nos. 94-0096/94-0117/94-0146/94-0301 (Illinois Commission, April 7, 1995) ["*Customers First Order*"] at 54, 61 (rates set with reference to Ameritech's LRSIC studies).

frame of the LEC switch.[1868] The Connecticut Commission ruled that SNET must provide the following interim unbundled loop prices varying by four zones: metro $10.18; urban $11.33; suburban $15.33; and rural $14.97.[1869] In the absence of further information about customer density or average loop length by zone, we used a simple average equal to $12.95. The Florida Commission set an interim rate for 2-wire loops at $17.00 per month for BellSouth, $15.00 for United/Centel, and $20.00 for GTE.[1870] Using weights equal to the number of loops served by each company in 1994 as reported in the Monitoring Report,[1871] we computed a weighted average price equal to $17.28. Pursuant to its *Customers First* Order, the Illinois Commerce Commission approved tariffs establishing business rates equal to $7.08, $10.92, and $14.45, and residential rates equal to $4.59, $8.67, and $12.14 in three density zones.[1872] Based on data from Table 2.5, page 20 of the Common Carrier Statistics, 1995 Preliminary, we found a 36 percent - 64 percent business residential split. Using Illinois Commission data for number of households in each density zone (996,750 in zone A; 2,788,759 in zone B; 4,594,567 in zone C), we computed an average loop cost of $10.93. The Michigan Commission approved transitional rates of $8.00 per loop for business and $11 per

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[1868] *Colorado Decision* at 66.

[1869] *Connecticut Decision* at 74.

[1870] *Florida Decision I* at 19; *Florida Decision II* at 25-26.

[1871] Monitoring Report, CC Docket No. 87-339, May 1996 (listing the following number of loops by company: GTE, 1,909,172; United/Centel, 1,627,314; BellSouth, 5,328,280).

[1872] *See* Ameritech Tariff, Ill. C.C. No. 20, Part 19, Section 1, issued October 23, 1995.

loop for residence.[1873] Based on Common Carrier Statistics, 1995 Preliminary data, we computed a 32 percent - 68 percent business-residential split in Michigan, which leads to an average rate of $10.03. The Oregon Commission set the rate for a "basic 2-wire loop set" at $11.95 plus $0.50 for a network access channel connection, for a total price of $12.45.[1874]

794. In order to set a proxy ceiling for unbundled loop elements we make use of the two cost models for which nationwide data are available and upon which parties have had the opportunity to comment in this proceeding. These models are the Benchmark Cost Model (BCM)[1875] and the *Hatfield 2.2*.[1876] Based on our current information, we believe that both these models are based on detailed engineering and demographic assumptions that vary among states, and that the outputs of these models represent sufficiently reasonable predictions of relative cost differences among states to be used as set forth below to set a proxy ceiling on unbundled loop prices for each state. We do not believe, however, that these model outputs by themselves necessarily represent accurate estimates of the absolute magnitude of loop costs. As we

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[1873] *Michigan Decision* at 94.

[1874] *Oregon Decision* at Appendix C, p.1.

[1875] *Benchmark Cost Model: A Joint Submission by MCI Communications, Inc., NYNEX Corporation, Sprint Corporation, U S West, Inc.* (December 1995), submitted by MCI Communications, Inc., NYNEX Corp., Sprint/United Management Corp., U S West, Inc. on July 24, 1996 (*BCM*). For a more detailed discussion of the *BCM*, *see infra*, Section VII.C.3.

[1876] *Hatfield Model, Version 2.2, Release 1*, (Hatfield Associates, Inc., March 1996), submitted by AT&T and MCI on May 16, 1996 (Hatfield 2.2); *see also* AT&T reply at Appendix D (Update of the Hatfield Model Version 2.2, Release 1). *See infra*, Section VII.C.3., for a more detailed discussion of the various versions of the *Hatfield* model.

discuss below, further analysis is necessary in order to evaluate fully the procedures and input assumptions that the models use in order to derive cost estimates. Furthermore, in the case of *BCM*, model outputs include costs in addition to the cost of the local loop. In order to correct for these considerations, we have developed a hybrid cost proxy in the following manner. First, we have applied a scaling factor to the cost estimates of each model. This scaling is based on the actual rates computed for unbundled loop elements in the six states referred to above. Specifically we have multiplied the cost estimate produced by each model in each state by a factor equal to the unweighted average of rates adopted by state commissions in the six states, divided by the unweighted average of the model cost estimates for the same six states. Our hybrid cost proxy is computed as the simple average of the scaled cost estimates for the two models in each of the 48 contiguous states and the District of Columbia. Neither *BCM* nor *Hatfield 2.2* provide cost estimates for Alaska and only the *BCM* provides an estimate for Hawaii. Our default loop cost proxies for Hawaii and Puerto Rico are based on the default loop cost proxies of the states that most closely approximate them in population density per square mile.[1877] We are not setting default loop cost proxies in this Order for Alaska or for any of the remaining non-contiguous areas subject to the 1996 Act requirement that incumbent LECs offer unbundled loop elements. We are not establishing default loop cost proxies for these areas because we are unsure that comparisons of the population densities of the continental states and of Alaska and other non-contiguous areas subject to the

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[1877] There is a strong (negative) correlation between population density and the loop costs reported by all the cost models. The correlation is significant at the 5% level. Population densities are from The Statistical Abstract of the United States 1995, Table Number 23. For Puerto Rico, land area is from Table 361 and population is from Table 1345.

1996 Act fully capture differences in loop costs. Regulatory authorities in those areas may seek assistance from this Commission should default loop cost proxies be needed before they have completed their investigations of the forward-looking costs of providing unbundled loop elements. Since our intention is to establish a ceiling for unbundled loop rates, we believe that it is necessary to take account of the variation in the data that we have used for scaling. While the six states that we considered appear to have based their rates on forward-looking economic cost pricing principles, the actual rates that they approved appear to reflect other factors as well. Furthermore, because only a small number of states have conducted such studies, some upward adjustment is warranted as a safety margin to ensure that the ceiling captures the variation in forward-looking economic costing prices on a state-by-state basis. We have therefore chosen to adjust the hybrid cost estimates upward by five percent for each state. A table listing the proxy ceilings on a statewide average basis is contained in Appendix D.

795. A number of parties have opposed the use of either the *Hatfield* model or *BCM*.[1878] Some critics, for example, have argued that the models may lead to inaccurate cost estimates since these estimates assume that a network is built "from scratch."[1879] Others have criticized specific procedures that have been used in the models to estimate both operating expenses and capital costs. As discussed below in Section VII.C.3., we believe that these criticisms may have merit. In a future rulemaking proceeding, we intend to examine in greater

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[1878] For a more detailed discussion of these generic cost models, *see infra*, Section VII.C.3.

[1879] *See, e.g.*, Florida Commission comments at 28-29; USTA comments at 54 n.45; Rural Tel. Coalition reply at 35.

detail various forward looking economic cost models. For the purposes of setting an interim proxy, however, we note that the criticisms have been directed largely toward the absolute level of cost estimates produced by the models, rather than the relative cost estimates across states. Since our hybrid proxy ceiling explicitly scales the model cost estimates based on existing state decisions and uses the model results simply to compute relative prices, we believe that these criticisms do not apply in the present context.

796. We also note that a third model, the *BCM 2*,[1880] could have been used in the construction of our interim cost proxy by simply taking the scaled cost estimates from three cost models instead of two. We have chosen not to follow this approach since parties have not had an opportunity to comment on the possible deficiencies of the *BCM 2*. For comparison purposes, however, we have computed the corresponding ceiling cost estimates, and have found that the scaled costs using the three model proxy are very similar to the estimated costs that were derived using the two models.[1881]

797. As discussed above, we believe that cost-based rates should be implemented on a geographically deaveraged basis. We allow states to determine the number of density zones within the state, provided that they designate at least three zones, but require that in all cases the weighted average of unbundled loop prices, with weights equal to the number of

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[1880] *Benchmark Cost Model 2* (July 1996), submitted by Sprint Corp. and U S West, Inc., on July 24, 1996 (BCM 2). For a more detailed discussion of this generic cost model, *see infra*, Section VII.C.3.

[1881] The coefficient of correlation is 0.991. Since the models are deterministic,this correlation does not reflect any relevant statistical properties of the models.

loops in each zone, should be less than the proxy ceiling set for the statewide average loop cost set forth in Appendix D.

798. As noted above, we have not yet had sufficient time to evaluate fully any of the cost models that have been submitted in the record, and our hybrid proxy is therefore intended to be used only on an interim basis. We believe that the methodology is consistent with forward-looking cost studies, but we also recognize that there may be situations in which forward looking loop costs will differ from computed costs, and accordingly, we have increased the state average loop costs by five percent and established the proxy as a ceiling. We emphasize that use of the hybrid proxy model can be superseded at any time by a full forward looking economic cost study that follows the guidelines set forth in this order. In addition, we are currently in the process of evaluating the more detailed cost models that have been submitted in the record,[1882] and will issue a further notice on the use of these models in the near future.

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835. These models appear to offer a method of estimating the cost of network elements on a forward-looking basis that is practical to implement and that allows state commissions the ability to examine the assumptions and parameters that go into the cost estimates. Although these models were submitted too late in this proceeding for the Commission and parties to evaluate them fully, our initial examination leads us to believe that the remaining practical and empirical issues can be resolved in the near future. In light of the advantages of such a

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[1882] For a more detailed discussion of the cost models submitted in this docket, *see infra*, Section VII.C.3.

generic approach, we will further examine these generic economic cost models by the first quarter of 1997 to determine whether we should use one of them to replace the default proxies we adopt in this proceeding. In that event, states would have the option of setting rates in arbitrations on the basis of an economic cost study or by using a generic forward-looking cost model approved at that time.[1988]

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859. We conclude that the term "nondiscriminatory" in the 1996 Act is not synonymous with "unjust and unreasonable discrimination" in section 202(a), but rather is a more stringent standard.[2057] Finding otherwise would fail to give meaning to Congress's decision to use different language. We agree, however, with those parties that argue that cost-based differences in rates are permissible under sections 251 and 252.

860. Section 252(d)(1), for example, requires carriers to base interconnection and network element charges on costs. Where costs differ, rate differences that accurately reflect those differences are not discriminatory. This is consistent with the economic definition of price discrimination, which is "the practice of selling the same product at two or more prices where

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[1988] We note that we address certain criticisms of the models in the context of their use in the development of the proxy for the unbundled local loop, *supra*, Section VII.C.2.b.(1)(b).

[2057] *See supra*, Section IV.G, discussing nondiscriminatory terms and conditions for interconnection, and *supra*, Section V.G., discussing nondiscriminatory terms and conditions for unbundled network elements.

the price differences do not reflect cost differences ... An important feature of the economic definition of price discrimination is that it occurs not only when prices are different in the presence of similar costs but also *when the prices are the same and the costs of supplying customers are different.*"[2058] As one economist has recognized, differential pricing is "one of the most prevalent forms of marketing practices" of competitive enterprises.[2059] Strict application of the term "nondiscriminatory" as urged by those commenters who argue that prices must be uniform would itself be discriminatory according to the economic definition of price discrimination. If the 1996 Act is read to allow no price distinctions between companies that impose very different interconnection costs on LECs, competition for all competitors, including small companies, could be impaired. Thus, we find that price differences, such as volume and term discounts, when based upon legitimate variations in costs are permissible under the 1996 Act, if justified.

861. On the other hand, price differences based not on cost differences but on such considerations as competitive relationships, the technology used by the requesting carrier, the nature of the service the requesting carrier provides, or other factors not reflecting costs, the requirements of the Act, or applicable rules, would be discriminatory and not permissible under the new standard. Such examples include the imposition of different rates, terms and conditions based on the fact that the competing provider does or does not compete with the

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[2058] David L. Kaserman & John W. Mayo, Government & Business: *The Economics of Antitrust & Regulation* at 273-74 (1995) (*citing* George J. Stigler, *The Theory of Price* (3d ed. 1966)) (emphasis added).

[2059] Hal R. Varian, "Price Discrimination," in *Handbook of Industrial Organization*, vol.1, p. 598 (R. Schmalensee and R.D. Willig eds., 1989).

incumbent LEC, or offers service via wireless rather than wireline facilities. We find that it would be unlawfully discriminatory, in violation of sections 251 and 252, if an incumbent LEC were to charge one class of interconnecting carriers, such as CMRS providers, higher rates for interconnection than it charges other carriers, unless the different rates could be justified by differences in the costs incurred by the incumbent LEC.

862. State regulations permitting non-cost based discriminatory treatment are prohibited by the 1996 Act. This conclusion is consistent with both the letter and the spirit of the 1996 Act and our determination that the pricing for interconnection, unbundled elements, and transport and termination of traffic should not vary based on the identity or classification of the interconnector.[2060]

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875. We conclude that section 251(c)(4) does not require incumbent LECs to make services available for resale at wholesale rates to parties who are not "telecommunications carriers" or who are purchasing service for their own use. The wholesale pricing requirement is intended to facilitate competition on a resale basis. Further, the negotiation process established by Congress for the implementation of section 251 requires incumbent LECs to negotiate agreements, including resale agreements, with "requesting telecommunications carrier

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[2060] *See infra*, Section XI.A., discussing transport and termination rates.

or carriers,"[2096] not with end users or other entities. We further discuss the definition of "telecommunications carrier" in Section IX. of the Order.

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907. Resale will be an important entry strategy for many new entrants, especially in the short term when they are building their own facilities. Further, in some areas and for some new entrants, we expect that the resale option will remain an important entry strategy over the longer term. Resale will also be an important entry strategy for small businesses that may lack capital to compete in the local exchange market by purchasing unbundled elements or by building their own networks. In light of the strategic importance of resale to the development of competition, we conclude that it is especially important to promulgate national rules for use by state commissions in setting wholesale rates. For the same reasons discussed in Section II.D of the Order, we believe that we have legal authority under the 1996 Act to articulate principles that will apply to the arbitration or review of wholesale rates. We also believe that articulating such principles will promote expeditious and efficient entry into the local exchange market. Clear resale rules will create incentives for parties to reach agreement on resale arrangements in voluntary negotiations. Clear rules will also aid states in conducting arbitrations that will be administratively workable and will produce results that satisfy the intent of the 1996 Act. The rules we adopt and the determinations we make in this area are crafted to achieve these

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[2096] 47 U.S.C. § 252(a)(1).

purposes. We also note that clear resale rules should minimize regulatory burdens and uncertainty for all parties, including small entities and small incumbent LECs.[2192]

908. The statutory pricing standard for wholesale rates requires state commissions to (1) identify what marketing, billing, collection, and other costs will be avoided by incumbent LECs when they provide services at wholesale; and (2) calculate the portion of the retail prices for those services that is attributable to the avoided costs. Our rules provide two methods for making these determinations. The first, and preferred, method requires state commissions to identify and calculate avoided costs based on avoided cost studies. The second method allows states to select, on an interim basis, a discount rate from within a default range of discount rates adopted by this Commission. They may then calculate the portion of a retail price that is attributable to avoided costs by multiplying the retail price by the discount rate.

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915. The 1996 Act requires that wholesale rates be based on existing retail rates, and thus clearly precludes use of a "bottom up" TSLRIC study to establish wholesale rates that are not related to the rates for the underlying retail services. We thus reject the suggestions of those parties that ask us to require use of TSLRIC to set wholesale rates. The 1996 Act does not, however, preclude use of TSLRIC cost studies to identify the portion of a retail rate that is attributable to avoided retail costs. TSLRIC studies would be entirely appropriate in states where

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[2192] *See* Regulatory Flexibility Act, 5 U.S.C. §§601 *et seq*.

the retail rates were established using a TSLRIC method. For example, the Illinois Commission calculated its wholesale rate using an avoided cost formula and long run incremental cost studies. Embedded cost studies, such as the studies used by the Georgia Commission, may also be used to identify avoided costs. Ideally, a state would use a study methodology that is consistent with the manner in which it sets retail rates.

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965. In the NPRM, we sought comment on whether an incumbent LEC can avoid making a service available at wholesale rates by ceasing to offer the retail service on a retail basis, or whether the incumbent should first be required to make a showing that withdrawing the offering is in the public interest or that competitors will continue to have an alternative way of providing service. We also asked if access to unbundled elements addresses the concern that incumbent LECs could withdraw retail services.[2273]

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1054. We conclude that the pricing standards established by section 252(d)(1) for interconnection and unbundled elements, and by section 252(d)(2) for transport and termination of traffic, are sufficiently similar to permit the use of the same general methodologies for establishing rates under both statutory provisions. Section 252(d)(2) states that reciprocal

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[2273] NPRM at para. 175.

compensation rates for transport and termination shall be based on "a reasonable approximation of the additional costs of terminating such calls."[2526] Moreover, there is some substitutability between the new entrant's use of unbundled network elements for transporting traffic and its use of transport under section 252(d)(2). Depending on the interconnection arrangements, carriers may transport traffic to the competing carriers' end offices or hand traffic off to competing carriers at meet points for termination on the competing carriers' networks. Transport of traffic for termination on a competing carrier's network is, therefore, largely indistinguishable from transport for termination of calls on a carrier's own network. Thus, we conclude that transport of traffic should be priced based on the same cost- based standard, whether it is transport using unbundled elements or transport of traffic that originated on a competing carrier's network. We, therefore, find that the "additional cost" standard permits the use of the forward-looking, economic cost-based pricing standard that we are establishing for interconnection and unbundled elements.[2527]

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1056. Consistent with our conclusions about the pricing of interconnection and unbundled network elements, we conclude that states that elect to set rates through a cost study must use the forward-looking economic cost-based methodology, which is described in greater detail above, in establishing rates for reciprocal transport and termination when arbitrating

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[2526] 47 U.S.C. § 252(d)(2)(A)(ii).

[2527] *See supra*, Section VII.B.

interconnection arrangements.[2529] We find that section 252(d)(2)(B)(ii), which indicates that section 252(d)(2) shall not be construed to "authorize the Commission or any State to engage in any rate regulation proceeding to establish with particularity the additional costs of transporting or terminating calls,"[2530] does not preclude states or this Commission from reviewing forward- looking economic cost studies. First, we believe that Congress intended the term "rate regulation proceeding" in section 252(d)(2)(B)(ii) to mean the same thing as "a rate-of-return or other rate-based proceeding" in section 252(d)(1)(A)(i). In the section on the pricing of interconnection and unbundled elements above, we conclude that the statutory prohibition of the use of such proceedings is intended to foreclose the use of traditional rate case proceedings using rate-of-return regulation. Moreover, forward-looking economic cost studies typically involve "a reasonable approximation of the additional cost,"[2531] rather than determining such costs "with particularity," such as by measuring labor costs with detailed time and motion studies.

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1065. We are concerned that some new entrants that do not already have interconnection arrangements with incumbent LECs may face delays in initiating service solely because of the

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[2529] *See supra*, Section VII.B. for a complete discussion of forward-looking economic cost-based methodology.

[2530] 47 U.S.C. § 252(d)(2)(B)(ii).

[2531] 47 U.S.C. § 252(d)(2)(A)(ii).

need to negotiate transport and termination arrangements with the incumbent LEC. In particular, a new entrant that has already constructed facilities may have a relatively weak bargaining position because it may be forced to choose either to accept transport and termination rates not in accord with these rules or to delay its commencement of service until the conclusion of the arbitration and state approval process. To promote the Act's goal of rapid competition in the local exchange, we order incumbent LECs upon request from new entrants to provide transport and termination of traffic, on an interim basis, pending resolution of negotiation and arbitration regarding transport and termination prices, and approval by the state commission. A carrier may take advantage of this interim arrangement only after it has requested negotiation with the incumbent LEC. The interim arrangement shall cease to be in effect when one of the following occurs: (1) an agreement has been negotiated and approved; (2) an agreement has been arbitrated and approved; or (3) the period for requesting arbitration has passed with no such request. We also conclude that interim prices for transport and termination shall be symmetrical. Because the purpose of this interim termination requirement is to permit parties without existing interconnection agreements to enter the market expeditiously, this requirement shall not apply with respect to requesting carriers that have existing interconnection arrangements that provide for termination of local traffic by the incumbent LEC. The ability to interconnect with an incumbent LEC prior to the completion of a forward-looking, economic cost study, based on an interim presumptive price ceiling, allows carriers, including small entrants, to enter into local exchange service expeditiously.[2544]

[2544] *See* Regulatory Flexibility Act, 5 U.S.C. §§ 601 *et seq*.

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Separate Statement of Commissioner Rachelle B. Chong

The passage of the Telecommunications Act of 1996[3276] marked the end of more than sixty years of monopoly style regulation. The changes wrought by the 1996 Act on the telephone industry are dramatic and comprehensive. I write separately to emphasize my strong belief that the pro-competitive path we have unanimously chosen in this interconnection order is the right one.

On the day the 1996 Act became law, the Commission embarked on a challenging journey to help implement the new statute. Our final destination has been clearly delineated by Congress. We are "to provide for a pro-competitive, de-regulatory national policy framework designed to accelerate rapidly private sector deployment of advanced telecommunications and information technologies and services to all Americans by opening all telecommunications markets to competition."[3277]

True to this charge, we have resolved to act quickly and decisively to open all telecommunications markets to competition, to provide pricing methodologies that will drive rates toward cost, and to provide a national policy framework that will achieve this restructuring of the industry in an orderly and efficient manner. The rules in this item do not favor any particular industry or player over another, but instead free them from outdated regulatory restraints in order to compete with each other.

[3276] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 *to be codified at* 47 U.S.C. § 151 *et. seq.* (1996 Act).

[3277] S. Conf. Rep. No. 104-230, 104th Cong., 2d Sess. 1 (1996).

The 1996 Act opens up the local telephone network to competitors, and provides them with unprecedented access through an interconnection framework.[3278] The Act provides three methods of entry through which a competitor may enter the local telephone market: (1) full facilities-based entry; (2) purchase of unbundled elements from the incumbent local exchange carrier (LEC), i.e. network "piece parts;" and (3) resale, which gives a competitor the ability to purchase an incumbent LEC's retail service at a wholesale price and repackage it for sale to the competitor's own end user.

Facilities-based Competition. The first entry option -- facilities-based competition -represents the most dramatic departure from our current bottleneck monopoly structure. A full facilities-based competitor would offer a myriad of distinct services through separate facilities to its subscribers, and thus providing consumers with the benefits of head-to-head competition. As a practical matter, however, we do not expect a market typified by full-fledged facilities-based competition to blossom overnight. These networks or systems must be planned, financed and constructed over time. As a result, the other two entry avenues -- the purchase of unbundled elements and resale -- take on a special importance in the near term to bring swift competition to the local marketplace.

Unbundled Elements. Some new entrants already have some network infrastructure in place, and lack only a few critical components in order to provide local exchange service to consumers. For example, today's cable operators have a coaxial wire that passes over 96.6% of the TV households in

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[3278] Interconnection refers to the physical linking of two networks for the mutual exchange of traffic.

America.[3279] If a cable operator can access the remaining necessary network elements from the incumbent LEC, the cable operator would be only a step away from providing local telephone service over its upgraded network. This example points out why it is essential for new entrants to obtain access to those network piece parts. In our order, we set forth a minimum list of unbundled network elements that incumbent LECs uniformly must make available to new entrants upon request. The state commissions may expand upon this list. We believe that this action will give new entrants what they need so competition is "jump started."

Resale. Resale is another critically important entry strategy because three types of new entrants stand to benefit. First, facilities-based competitors that want to immediately enter the market prior to completing their own networks can use resale as a transition mechanism. Second, facilities- based competitors whose existing infrastructure does not overlap the incumbent LEC's service area, may choose to use resale to ensure that it can offer a competing local service package within the same service territory as the incumbent LEC. Third, new entrants who do not intend to offer facilities-based competition will be able to compete immediately in the local market by purchasing discounted services of the incumbent LEC. For all of these categories, our decision provides a viable avenue for immediate market entry.

Free Market Negotiations. I highlight that the 1996 Act has made the mechanism for entry a *free* market negotiation process between the incumbent LEC and any potential new competitor. Under Section 252(a)(1), the Commission's Section 251 rules play no role if an incumbent LEC and a new entrant reach a purely voluntary agreement, and the state

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[3279] Paul Kagan Associates, Inc., *Marketing New Media*, Mar. 18, 1996.

commission approves it through the process set forth in Section 252.

Need for Minimum National Baselines. It is only if the carriers are unsuccessful in their voluntary negotiations that government steps in. The Act provides that the state commissions arbitrate the disputes. In today's order, we set forth a baseline of terms and conditions for an arbitrated interconnection agreement. I support this action for three reasons. First, because interconnection matters are very complex and technical, I believe that minimum national guidelines will help parties lower their transaction costs and will help drive them to reach their voluntary agreements much faster. At the outset of their voluntary negotiations, parties will understand what their minimum rights will be in a subsequent state commission arbitration process; it is our hope this may encourage earlier agreement.

Second, a baseline of terms and conditions simplifies the state commission arbitration process. A baseline enables a state commission to quickly approve an agreement and thus rapidly introduce competition. The presence of a baseline minimizes any regulatory delay that might result if a state commission were to establish from scratch its own pricing methodology or conduct a proceeding to identify network elements that must be unbundled.

Third, in establishing some national minimum baselines, we greatly aid new entrants who have national or regional strategies. Without such baselines, these competitors would face a "patchwork quilt" of differing state regulatory requirements that may create a potential entry barrier by increasing their entry costs and causing substantial delay. Thus, it is my view that these baselines promote swift competitive entry, which in turn will lead to the earlier introduction of competitive services to consumers.

Access Charge Transition. Although we take a great leap forward toward competition with this interconnection order, our goal in making local telephone competition a reality will not be complete until we finish universal service reform and restructure our current access charge regime. Our order notes that the Act sets forth a specific time frame by which the Commission must issue final rules as to interconnection (August 1996) and universal service reform (May 1997). Because of the time differential between these dates, and in order to avoid undue disruption of the incumbent LECs' ability to support universal service, I have supported our decision to require new entrants when purchasing unbundled elements to pay a portion of certain access charges until no later than June 30, 1997. My support for the establishment of a short term access charge transition scheme is premised on the Commission's firm commitment to complete universal service and access charge reform by the first half of 1997. I underscore my determination that the interim access charge mechanism proposed herein is of a finite duration. I can foresee no circumstance upon which it would be extended beyond the dates set forth in our order.

Pricing Methodology. Prices of interconnection and unbundled elements, along with prices for transport and termination and resale, are all crucial to any interconnection agreement. Again, should the parties voluntarily agree on such prices, these agreements will be submitted to the states for approval and there is no government intervention in the process.

If carriers cannot agree, however, today's decision makes clear that the FCC will *not* set these prices. The Act provides that the appropriate state commission will step in to set prices. To help guide state commissions as they set prices according to local conditions, we have established methodological pricing principles that are consistent with the Act's cost-based pricing provisions. We have asked the state

commissions to use the cost-based pricing methodology described in our order when they conduct an economic cost study to set their state specific rates. A clear benefit of this approach is that such a national framework will encourage the swift establishment of a common, pro- competition understanding of pricing principles among the states.

We also have established certain default proxies that states will use in the interim, if they have not completed a cost study during an arbitration, or if they lack the necessary resources to initiate their own cost study. It is my view that these default proxies, which are either price ceilings or price ranges, will greatly speed competition. For example, in a situation where the state commission has not yet completed a cost study but must render a decision on specific pricing issues in an arbitration pursuant to the deadline imposed by Section 252(e)(4), the default proxies will assist the state commission in resolving the pricing issues quickly and in a way consistent with the Act's cost-based pricing principles.

I emphasize that a state commission has the flexibility to set a specific rate that is either above or below the default proxy ceiling or range if it has conducted its own cost study consistent with the pricing methodology set forth in our order. The default proxy is only an interim mechanism and it may not be relied upon once a state commission has completed its own economic cost study.[3280]

CMRS-LEC Interconnection Issues. In our order, I have supported our decision to allow CMRS-LEC interconnection matters to be governed by the Sections 251/252 provisions,

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[3280] It is unfortunate that we did not have enough of a record in this proceeding to decide what would be an appropriate proxy for paging carriers' termination costs or to set a default proxy. I am committed to moving forward with a further rulemaking proceeding on this issue as quickly as possible.

while continuing to acknowledge our continuing jurisdiction pursuant to Section 332 over CMRS-LEC interconnection matters. In doing so, we have declined to opine on the precise extent of our Section 332 jurisdiction over CMRS-LEC interconnection matters, however. I emphasize that by opting to use the Section 251/252 framework, we are not repealing our Section 332 jurisdiction by implication or rejecting Section 332 as an alternative basis for jurisdiction.

While we have generally crafted our interconnection rules not to favor any particular industry, player or technology over another, we cannot shut our eyes to inherent differences between some classes of carriers' services that may pose potential problems when we seek to apply our new interconnection rules. I believe that should the need arise in the future, we should not hesitate to adapt some of our general interconnection rules to recognize the unique nature of particular classes of service providers, such as CMRS providers. It is for this reason that I supported the Commission's decision to reserve its right to exercise jurisdiction over LEC-CMRS interconnection under Section 332.

There are several differences that set wireless CMRS providers apart from some of the other telecommunications carriers that will avail themselves of the Sections 251 and 252 interconnection framework. First, when adopting Section 332 in 1993, Congress created a national regulatory framework for CMRS providers, and granted the FCC authority to preempt states from entry and rate regulation.

Congress made clear that its intent was to "foster the growth and development of mobile services that, by their nature, operate without regard to state lines as an integral part of the

national telecommunications infrastructure."[3281] This recognition that CMRS services are uniquely interstate in scope was apt. CMRS service areas, which are established federally, can encompass more than one state jurisdiction.[3282] Congress was rightly concerned that imposing multiple state regulatory schemes on CMRS providers may prove unduly burdensome, cause delay, and otherwise inhibit the industry's growth. Notably, Congress did not repeal Section 332 when it provided new Sections 251 and 252 in the 1996 Act.

Second, CMRS providers have suffered past discrimination at the hand of the LECs and by certain state commissions with regard to interconnection matters. Today's record is replete with examples of LECs that have significantly overcharged CMRS providers for past interconnection. Further, in violation of our rules, our record reflects that in some cases, LECs have refused to pay CMRS providers for calls terminated by LECs on the CMRS networks, while other wireline carriers have received such compensation from the LECs. In other instances, LECs have required certain CMRS providers to pay for the traffic the LEC carrier originates and terminates on the

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[3281] H.R. Report No. 103-11, 103rd Cong., 1st Sess. 260 (1993).

[3282] For example, Personal Communications Service (PCS) providers in the Washington -Baltimore Major Trading Area (MTA) are subject to six jurisdictions -- Pennsylvania, Delaware, Maryland, Virginia, West Virginia and the District of Columbia -- due to the large size and location of the federally set service areas. Should one of these PCS providers need to arbitrate an interconnection agreement pursuant to Section 251 and 252, such PCS provider could be subjected to as many as six state arbitration proceedings. This scenario could impose undue burdens, such as increased transaction costs, regulatory delay, and the potential for inconsistent results, for CMRS providers with interstate service areas. For this reason, we reserve our right to in the future to use Section 332 as an alternative basis for jurisdiction over CMRS providers faced with this type of a dilemma.

systems of the CMRS provider. These problems have been compounded by certain state commissions who have limited access by CMRS providers to more reasonable interconnection rates afforded by LECs to other wireline carriers.

In this order, we have taken a variety of measures to remedy this discrimination and to ensure that CMRS providers are placed on an even footing with other telecommunications carriers when obtaining LEC interconnection. I am particularly pleased that we will allow CMRS providers with current interconnection agreements that provide for non-mutual compensation an opportunity to renegotiate those agreements under the framework of Sections 251/252, without incurring any early termination penalties. In light of the past discrimination CMRS providers have experienced, however, I would have taken two additional steps.

First, I would have extended the "fresh look" opportunity to all CMRS providers -- not just those with non-mutual compensation arrangements. Our decision was to limit relief in this instance to contracts that are clearly unlawful because they violate Section 20.11 of our rules. Section 20.11, however, requires not only that CMRS-LEC interconnection agreements comply with principles of mutual compensation, but also that each carrier pay reasonable compensation. I believe that the record in this proceeding clearly demonstrates that the rates the LECs have charged CMRS providers have far exceeded their costs and thus could not fairly be characterized as "reasonable" compensation.

Second, instead of requiring the CMRS providers to continue paying their current interconnection rates, I would have permitted CMRS providers to immediately begin paying the default proxy rate while their interconnection arrangements were being renegotiated.

It is my hope that on a going-forward basis, CMRS providers will be able to obtain fair, reasonable and non-

discriminatory interconnection rates under the terms of today's decision. For reasons of simplicity and regulatory parity, it makes sense to me to have a single regulatory scheme pursuant to Sections 251 and 252 apply as to all incumbent LEC interconnection matters. Bearing in mind Congress' concerns about the interstate nature of the CMRS industry, however, I have concerns that the state-by-state arbitration process may pose undue burdens on, or otherwise hinder the growth of, the CMRS industry. If it does, I would not hesitate to invoke our Section 332 jurisdiction if I believe that the framework we impose today is having adverse impacts on the CMRS industry.

IN THE UNITED STATES COURT OF APPEALS
FOR THE EIGHTH CIRCUIT

GTE Service Corporation, et al.	)	Case No. _____
v.	)	(DC Circuit Case No. 96-1319)
Federal Communications Commission, et al.	)	(Cons. with Case No. 96-3321)

SUPPLEMENTAL AFFIDAVIT OF DENNIS B. TRIMBLE

STATE OF TEXAS §
§
COUNTY OF DALLAS §

Dennis B. Trimble, being duly sworn according to law, states as follows:

1. My name is Dennis B. Trimble and I am the Assistant Vice President - Marketing Service (Acting) for GTE Telephone Operations ("GTE" or "the Company"). In that capacity I [*2*] am responsible for, among other matters, analyzing the demand characteristics of GTE's regulated product offerings and developing costs, prices and associated tariff filings for all of GTE's regulated services, inclusive of tariff filing activity with the FCC.

2. I have over 20 years experience with GTE. During this time I have held various positions throughout the Company, almost all related to demand analysis, market research, forecasting, and/or the pricing of regulated telecommunication services. I have a B.A. in Business (1970) and an M.B.A.

(1973) both from Washington State University. In 1972, I became an Assistant Professor at the University of Idaho, where I taught courses in statistics, operations research and decision theory. From 1973 through 1976, I completed course work toward a Ph.D. degree in Business at the University of Washington, majoring in quantitative methods with minors in computer science, research methods, and economics.

3. I have reviewed in detail the Federal Communications Commission's ("FCC") *First Report and Order* in CC Docket No. 96-98 which was issued on August 8, 1996. Among other things, the *First Report and Order* establishes (at ¶¶789-827) default proxy ceiling prices that are to be used after an arbitration proceeding as the price for unbundled network elements unless a state regulatory agency has completed its review of studies that comport to the FCC's prescribed, new costing methodology.

4. I previously provided an affidavit (*Original Trimble Affidavit*) that was attached to the Joint Motion of GTE Corporation and the Southern New England Telephone Company for Stay Pending Judicial Review filed with the FCC ("*GTE/SNET FCC Motion*"). The *Original Trimble Affidavit* had two main purposes: (i) to describe the GTE cost studies submitted in a [*3*] Florida Public Service Commission ("FPSC") proceeding that were used by the FCC in developing a proxy for the outcome of a study conducted according to its new cost methodology; and (ii) to compare the forward-looking cost studies typically prepared by GTE with the new, forward-looking costing methodology required by the *First Report and Order*. To recap that discussion, GTE's forward-looking cost studies use a Total Service Long Run Incremental Cost ("TSLRIC") methodology. The *First Report and Order* requires use (at ¶¶ 672-703) of a methodology the FCC calls

Total Element Long Run Incremental Cost ("TELRIC"). The primary difference lies in the allocation of common costs that cannot be directly assigned to a particular service or network element. GTE's methodology would assign all common costs to various services during the pricing process, using a method based on the market-allowed contribution levels. The FCC's methodology assigns as much of the common costs as possible to each network element if there is any possible reasonable relationship that can be used for assignment. For the remaining costs for which a reasonable relationship simply does not exist (*e.g.*, the company president's salary), the *First Report and Order* describes (at ¶¶ 694-699) a pricing development procedure using "reasonable" allocation methodologies (*e.g.*, uniform percent markup).

5. The *Original Trimble Affidavit* demonstrated that the FCC's reliance upon the GTE Florida study output as a reasonable approximation of the cost estimates that would be produced by a study conducted using the new FCC methodology was flawed. It further showed that the result of a cost study based on the FCC methodology will be higher than that of the GTE [*4*] study because a greater amount of common costs are assigned in the costing process, rather than in the pricing process. Yet inexplicably, the FCC's proxy price ceilings are set substantially lower than either the purely incremental costs produced by GTE's methodology (that do not include common costs), or those incremental costs adopted by the FPSC that allowed a very small allocation of common costs.

6. The three purposes of this supplemental affidavit are: (i) to discuss the serious flaws in the FCC's loop proxy price development process; (ii) to compare the results of cost studies prepared using the FCC's prescribed methodology that GTE has completed during the period following the filing of the

GTE/SNET FCC Motion with the FCC's mandatory proxy price ceilings; and (iii) to compare the revenues that would be obtained using the FCC's proxy prices from an average residence or business service in GTE's California service area both the revenues generated from elements priced at TELRIC and to current average per line revenues. As the attached Exhibits 1 and 2 demonstrate, when GTE adheres to the FCC's prescribed costing methodology, the costs that result are much higher than the mandatory proxy ceiling prices. Specifically, GTE's loop costs average at least 50 percent larger than the FCC's ceiling price. As described following, this result is not startling because the FCC based its statewide average loop proxy price calculations on inputs that do not represent actual statewide average loop costs. GTE's unbundled end office switching costs average at least two-and-a-half times the FCC's price ceiling of $0.004 per minute, even when all possible switching features and functions are not included. Moreover, as Exhibit 3 shows, when GTE compares the revenues that would be [*5*] obtained from the FCC's proxy prices to either the revenues from elements priced at the TELRICs computed by GTE or to current revenues per line, it is clear that a large gap exists. It is also obvious that the effective discount from the equivalent retail service price using the FCC proxy prices is much larger than the discount ceiling established by the FCC for resold services.

7. The *First Report and Order* specified (at ¶ 744) that the rate for unbundled local loops be a flat, per-month charge. Further, the FCC specified (at ¶ 794, Appendix D) the statewide average ceiling price that a state regulatory agency could adopt in an arbitration proceeding unless the state commission had completed its review of cost studies that comport to the FCC methodology.

8. The FCC's derivation of loop proxy prices is seriously flawed and cannot in any way be portrayed as representative of GTE's loop costs. The FCC used three sets of 6 numbers (or 18 numbers in total) to calculate the loop proxy price. First, the FCC used the loop prices adopted by 6 state commissions (Colorado, Connecticut, Florida, Illinois, Michigan, Oregon). GTE does not operate in two of those states, and the state agency decisions in three of the four other states involved only the regional Bell Operating Company ("BOC"). The FCC's use of prices developed for BOC serving areas is surprising on its face, because the *First Report and Order* (at n.1877) recognized that there "is a strong (negative) correlation between population density and the loop costs." (This simply means that the higher the population density, the lower the cost, and the lower the population density, the higher the cost.) Because BOC serving areas are far more densely populated that GTE's serving areas, this alone seriously understates the [*6*] proxy price that would be representative for GTE. Moreover, the involved state commissions did not rely upon cost study methodologies that were anywhere close to the FCC's prescribed methodology.

9. Second, the FCC used the results of two cost models, the Benchmark Cost Model (BCM) and the Hatfield 2.2 model for the same 6 states. This is also surprising because the *First Report and Order* admits (at ¶ 835) that both of these models "were submitted too late in this proceeding for the Commission and parties to evaluate them fully." And, GTE's preliminary evaluations of each model reveals that both systematically produce absurdly low cost estimates. The BCM model does not contain the service drop (the wire from the end of the cable to the customer premises) or other vital loop cost components (*e.g.*, cross-connects, splice pedestal terminals, splicing). GTE has already described the numerous shortcomings of the

Hatfield 2.2 model, including the fact that it understates loop costs by at least $8 per loop. (*See First Report and Order* at ¶ 831)

10. Third, the FCC used these 18 numbers in an extremely simplistic calculation methodology. It calculated a proxy price by averaging the results of two calculations for each state and increasing that average by 5 percent. The two calculations were the result of multiplying the BCM and Hatfield 2.2 cost estimates by a so-called "scaling factor." The "scaling factor" was derived by dividing the simple average of the 6 state commission prices by the sum of the average of the BCM and the Hatfield 2.2 estimates for the same 6 states. [*7*]

Mathematically, this is expressed as:

> Proxy Price $_{\text{state i}}$ = ((Proxy Price $_{\text{BCM for state i}}$ + Proxy Price $_{\text{Hatfield 2.2 for state i}}$) divided by 2) times 1.05, where
>
> > Proxy Price $_{\text{BCM for state i}}$ = (BCM estimate for state i) times ((average of 6 state prices) divided by (average of 6 state BCM estimates)), and
> >
> > Proxy Price $_{\text{Hatfield 2.2 for state i}}$ = (Hatfield 2.2 estimate for state i) times ((average of 6 state prices) divided by (average of 6 state Hatfield 2.2 estimates)).

11. Because the state commission prices were not representative of statewide averages, and were in fact based predominately on BOC data, the FCC clearly erred in relying upon those prices to compute statewide average proxy prices. Further, because both the BCM and Hatfield 2.2 models are fundamentally flawed and have not been rigorously review by

the FCC or by the parties subjected to the results of calculations based upon those models, the FCC clearly erred in relying upon those cost estimates.

12. GTE's TELRIC cost studies are based upon the methodology prescribed by the *First Report and Order* (at ¶¶ 672-702). GTE first calculated the direct forward-looking cost of each network element. GTE then determined the common costs that could not be attributed to any particular element or sub-group of elements. According to the FCC's methodology, these latter costs are to be allocated to all network elements during the pricing process.

13. Exhibit 1 shows the results of the GTE cost studies for loops in several states where GTE serves a large number of customers. The cost developed using a TELRIC [*8*] methodology averages 50 percent larger than the FCC's proxy ceiling price. This difference clearly supports my conclusion in the *Original Trimble Affidavit* (at ¶ 9-14) that the FCC's loop proxy price is arbitrary and inappropriate because it is based upon a mixture of cost estimates for only the bare incremental cost of a loop, rather than being based upon a TELRIC methodology. Further, to assure a proper comparison, neither the proxy price nor the GTE TELRIC results described above include any allocation of common costs as the FCC's own cost methodology requires. Exhibit 2 also shows a comparison of the FCC proxy prices with the output of a new version of the BCM, called BCM II. The BCM II was developed in response to various criticisms of the BCM. Thus, BCM II should be more reflective of forward-looking loop costs than BCM. In the ten GTE serving areas, the BCM II estimates are more than double the proxy prices. This result also supports my conclusion that the FCC's loop proxy prices are woefully low.

14. The *First Report and Order* specified (at ¶ 412) that the unbundled local switching network element is to include not only line-to-line and line-to-trunk "basic switching," but also all of the features, functions, and capabilities, such as a telephone number, directory listing, dial tone, signaling, and access to 911, operator services and directory assistance, all vertical features including custom calling and CLASS features, Centrex, and any technically feasible customized routing functions. The unbundled local switching rate structure is required to include "a combination of a flat-rated charge for line ports, which are dedicated to a single new entrant, and either a flat-rate or per-minute usage charge for the switching matrix and for trunk ports, which constitute shared facilities, best reflects the way costs for unbundled local [*9*] switching are incurred." *Id.* at ¶ 810. Unless a state regulatory agency has completed its review of cost studies that comport with the FCC's costing methodology, state agencies are required (*Id.* at ¶ 815) to set the rate for unbundled local switching "so that the sum of the flat-rated charge for line ports and the product of the projected minutes of use per port and the usage-sensitive charges for switching and trunk ports, all divided by the projected minutes of use, does not exceed 0.4 cents ($0.004) per minute of use and is not lower than 0.2 cents ($0.002) per minute of use."

15. Exhibit 2 compares the FCC's proxy price for unbundled local switching to the results of cost studies prepared by GTE using the FCC's TELRIC methodology. Shown are GTE's cost estimates for three end office switching cost elements for a number of states where GTE serves a large number of customers. Those elements are: (i) a per minute cost to switch a call; (ii) a per line per month cost for the non-usage sensitive components of a switch (*e.g.*, line card); and (iii) a per line per month cost for a representative feature package. The cost element of a per line, per month cost for the feature

package was chosen to comply with the FCC's mandate that a rate structure recover costs "in a manner that efficiently apportions costs among users." *First Report and Order* at ¶ 755. It is very important to note that the feature package selected for illustrative purposes does not include all of the features, functions and capabilities that a switch may be capable of providing. The package selected includes only many of the most commonly used features (*e.g.*, Call Waiting, Emergency Bureau Access, Speed Calling, Time of Day Routing). Also not included in any of the three cost estimates in Exhibit 2 are the costs associated with a directory listing or the more esoteric switch features such as customized routing [*10*] and Meet-Me Conference Bridging. The feature package used in calculating the cost for two states shown in Exhibit 2, Ohio and Wisconsin, did include additional, more advanced features, just to show the potential cost impact on a per minute basis.

16. To provide a logical comparison, GTE converted the two per line, per month cost elements into an equivalent per minute cost by dividing by the average switched minutes of use per month, including minutes associated with both local and long distance calls. The result of this calculation is a composite TELRIC per minute cost that is three-and-a half times the FCC's upper price ceiling of $0.004, even when ignoring the two states with feature packages that include extraordinary features. These results confirm my conclusion in the *Original Trimble Affidavit* (at ¶¶ 17-20) that the FCC's local switching proxy price was based upon information that estimated the incremental cost of line-to-line or line-to-trunk basic switching, but did not, as the FCC's own methodology requires, include either the costs related to other switch features and functions, or common costs.

17. Exhibit 3 compares the FCC's proxy price for a combination of unbundled local switching and an unbundled local loop (*i.e.*, the reassembled equivalent of local service) to both the results of a GTE California ("GTEC") TELRIC study, and to current average revenues per line in California. To prepare this comparison, GTE derived the average monthly usage per line, including local and toll minutes of use, for an average of residence and business lines. This average number of minutes was multiplied by the FCC's proxy price ceiling of $0.004 per minute, and that switched usage revenue amount was added to the flat rate components that would also be needed to comprise reassembled local service (*i.e.*, a local loop and a Network [*11*] Interface Device, or "NID"). GTE also derived the current revenues per line for an average of California residence and business lines, including flat rate local charges, local and toll usage charges, and vertical feature charges. When the unbundled network elements of switching, a loop and a NID are combined to replicate local service, the revenues from those elements when priced at the FCC's proxy rates are approximately half of GTEC's TELRIC for the combined service (Exhibit 3, $18.88 compared to $36.35 per month). This comparison of price to cost understates the shortfall, because by definition TELRIC does not include an allocation of common costs. Further, the FCC's proxy prices would provide new entrants with approximately a 60 percent discount off GTEC's current average retail revenue per line in California (Exhibit 3, $18.88 compared to $46.31 per month). Clearly neither the FCC proxy price nor the TELRIC methodology come anywhere close to providing revenues that cover GTE's cost of providing service.

18. Moreover, the 60 percent discount that results from the FCC proxy price cannot be squared with the FCC's interim wholesale rates. Section 51.611 of the FCC's rules requires that

resale discounts should be "no more than 25 percent." Thus, the FCC's proposed requirements for its two pricing mechanisms (resale and unbundling) are totally inconsistent. The potential discount is significantly below the Company's costs and would result in GTE subsidizing competitive entry.

19. Based upon my review of the FCC's *First Report and Order* and the results of studies GTE has conducted using the FCC's own costing methodology, I am convinced that the FCC's proxy price ceilings for unbundled loops and local switching are significantly below the [*12*] cost of providing those network elements, and in absolute conflict with §§ 51.319(c)(1)(C), 51.503 and 51.505 of the FCC's rules.

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AT&T INVESTMENT COMMUNITY MEETING

Transcript
March 3, 1997—AM Session

JOHN ZEGLIS: Okay, Thank you John. The subject is public policy. Like it or not, public policy still plays a very large role in AT&T's current operations and particularly its future aspirations. That's pretty much a function of where we've come from as a regulated utility. It's almost equally a function of where we want to go into regulated monopoly markets. It means we've had to seek a lot of change in the public policy arena. And my purpose here this morning is to persuade you that our program for this public policy work is not nearly as helter skelter as the briefs and counter briefs, charges and counter charges may make you think on a daily basis. We have structured our initiatives in the public policy arena around these four central strategic objectives. Number one, we need to eliminate the unnecessary regulation of AT&T. That means there has been too much of it and it's been lopsided against us and in favor of our competitors. Number two, we need to open monopoly markets to new entry. That means the local exchanges in the United States and just about any other country outside this country.

Number three, until we get those markets open, we need to enforce monopoly safeguards. The most celebrated here is clearly the MSJ like safeguard in the United States; no RBOC long-distance entry until their markets are competitive.

And then the fourth goal, also until we get those monopoly markets made competitive, is to use public policy to bring down this exorbitant 15 dollar carrier-to-carrier payment bill that we lug around? We call that access domestically and international settlement rates globally.

So the modus operandi for this talk is to look at those four objectives. We'll do all of them domestically first. We'll double back and do them internationally at the end.

We're going to talk about where we stand today, where we're going to go, what are the big plays this year and next, and in the end what kind of market framework can we deliver to AT&T for us to execute on our strategy.

All right. Number 1, deregulation of AT&T. This is the most fun because it's essentially done. We have had to seek this relief at two levels, state and federal. State as a practical matter we were done with long-distance regulation of our prices and earnings by the end of the 1980s. Further good news from the state, we're seeing no inclination to resume regulation of AT&T's new local service operations in a few of the states where nondominant by statute. In most of the others the commissions look like treating us for what we are. The second, third, fourth new entered with zero market share and not in need of any kind of traditional public utility regulation.

At the federal level, at the FCC this has been a tougher nut. And if you follow this, you know we've spent the 1990's peeling off the wraps a layer at a time.

The progression is also well-known to most of you. We've gone from rate of return to price caps to streamline tariffs to contract tariffs to nondominant domestically, to nondominant

internationally and now we're even up to de-tariffing. And now we've got an adjustment to make in the course as to whether that's mandatory or whether we can use tariffs where it makes sense. The point of it all is that AT&T, state and federal, has now escaped active regulation of our prices, our earnings and our services. Along the way we've thrown off some ancillary wraps having to do with the network disclosure, regulatory accounting rules, we've got a little mop up to do here. There is some bundling rules out of the old computer inquiry two, prohibition of equipment and services going together. We need to work off some safety nets, improve some deaveraging rules. None of that is seriously getting in our way right now. The asymmetric regulation is completely gone. We're the same as MCI, Sprint and the other long-distance companies. We're better than the local exchange carriers whose markets we're entering. Truth is we'll probably always be subject to regulations at some level. But this is pretty close to about what we want say that regulation on AT&T is no longer a significant constraint on our strategy or its execution.

So I think the thing to do is to get off of that one and go onto numbers 2 and 3. These are more interesting because they are work in progress and the involve some heavy lifting still for the company and the industry. Recognize that the numbers 2 and 3 here are two sides of the same coin, opening the local exchanges and prohibiting the RBOC long-distance entry until we do. And since February of 1996 this has been pretty much a story of the new Telecom Act. We're going to look at these two objectives separately. But we ought to also recognize the critical interdependency that the act created. Prior to 1996 we had a serious policy disconnect on these two objectives. You had Judge Green deciding on long-distance entry for the RBOC, but he couldn't touch the local exchanges. You had the State deciding on local exchange entry, but they couldn't do anything

about RBOC long-distance. And so the AT&T nightmare in all of this was that the MFJ relief would come out of sequence. That is, the courts would finish tearing down the MFJ and opening our long-distance market before the state had finished the job of opening the local. And that's why the 1996 act is such a great relief to us. It connected the two objectives, it commanded the opening of local first, and only then do the RBOCs come out into long-distance. And now we're engaged in the key to its implementation, namely we got to get the sequence correct so that the incentives stay in the right place.

All right. On that score, how are we doing? Well, I think as Bob told you, 1996 was the year of getting the rules in place for this new local entry. And our Congress dictated the order of events. The February Telecom Act gave us some standards. The FCC rule making in August gave us some more. Carrier negotiations in the spring and summer were to iron out some of the wrinkles and we were to go to the state commissions for arbitration for the final rules in the fall and winter. We had a surprise along the way, known as the 8th Circuit Court of Appeals. Got that stay in October and we're looking for a decision in April or May. But as it's turned out that may not be as important as we first thought, because the pace of decision-making, the number of decisions and especially their content in the hands of the state has worked out almost exactly as we expected and more importantly as we hoped for. So we're going to take a look at that now. And I want to tell you we're going to use a coverage metric here that goes by access lines. That recognizes that a decision in a small state isn't as valuable to us as a decision in a large state. And it begins by showing you that we have 98 percent of the access lines covered by either final negotiations in arbitrations or those that are in progress. We've done 81 percent complete. That comes out of nearly 50 arbitrations and that covers 120 million lines. We're

going to finish up another 17 percent in 1997. That's some 30 odd arbitrations over 25 million lines. The two percent there are either exempt rural local exchange carriers or places we don't think we need to be.

About half of that solid blue is on appeal to the district court. Frankly I think we'll make it all of the blue on one side or the other.

And only eight of those arbitrations are actually resulted in signed agreements with AT&T. That's because after you get the decision, you are sent back to the bargaining table to implement principles and to finish the details, not always a quick task.

All right. If that's our coverage, how about our results? Well, the most celebrated issue in these arbitrations is always reselling. Reselling all or a piece of the local exchange carriers's services and networks. And there are two ways to resell under the act. One is the total service, that's what we call total service resale, TSR. And let's look at this one first because the act gave us the formula for the wholesale discount. It said you take the RBOC or the nonRBOC retail price back out of voided costs and properly applied to the FCC that ought to bring you out roughly in a range of 17 to 25 percent. How did we do here? First the RBOC territory. Terrific results, 91 percent of those lines are in or better than the FCC range. We're 102 million lines covered within that proxy range or a little better.

We've got five percent of six million line underneath it. Utah, with seven or eight percent on the resale discount. And if you look at how these things distribute, you would see that we've got a major cluster there in the 20 to 22 percent range, and way

out there on the right, take a bow to the national champion, the District of Columbia has a discount rate of 31.4 percent.

Quickly into GTE territory we've got another story going here. We have 52 percent of GTE lines where we've litigated in that discount range. 44 percent of the time we're out of it. That's about 7 million lines. If you live in California, Florida, Oklahoma, Ohio, you ought to be embarrassed.

Another way to resell, and one that figures prominently in our plans, is what we've been calling the unbundled network element. And here if anything we've got a better story coming out of the arbitration. First, everybody who has addressed this issue everywhere is giving us the full unbundling that the FCC called for in its August interconnect order. That means we can get at the elements, at the features and the functions and the ILEC network piecemeal. That includes the vertical features of the switch. We can pick and choose what we need.

Second piece of real good news. Not only can we have them individually, we can buy the elements, put them all back together, create local service out of it, something we call the unbundled network element platform, UNE P. If you can remember that we'll speed up the presentation. But 92 percent of the lines coming out of these arbitrations are eligible for recombination in the way I described, and we will be appealing intensely Georgia, Tennessee, Louisiana and Alabama, where it is not permitted. Nice work Bell South, but you're going to get reversed.

All right. Next issue, what price for these unbundled elements? Well, more good news. Most of the decisions have come out in favor of a pricing methodology that uses long-run incremental forward looking costs. There area few hybrids in the mix, but

the nice part of this is no decision uses the embedded backward looking costs to price these network elements. Again, how are we doing? RBOCs first. We have 94 percent of the RBOC arbitrated lines covered by that forward looking cost methodology, and when you put that methodology on to the costs and the elements in the RBOC territory, it turns out that something like 74 percent of the prices- this is loop prices- come out near or below what the FCC estimated would be the case when it issued its August order. These are called proxy prices and they were guesstimates based upon what the forward looking cost methodology would produce. Better pause and acknowledge the national champion, Illinois. 43 percent of the FCC loop proxy. You can get a loop in downtown Chicago for $3.72 a month.

Again, GTE, a little different, this is kind of an amazing story. We have 81 percent of those GTE lines have been arbitrated to use the forward looking cost methodology. Let's put that cost methodology on the actual cost, going forward, and what do we get? Wow. Only 28 percent of the lines fall within that FCC proxy projection, something like 60 odd percent of the lines are outside it, makes you wonder whether they really are high cost. Also going to have to do something about some attempts to put non-recurring charges on us when we win customers in this manner. Those aren't cost based and we're in the process early this year of litigating any such charges back to cost.

Good news I guess is that the business case for using this unbundled platform is going to turn out to be a lot less sensitive to the pricing results than TSR. And that's where I want to move next. I would like to line up for you the economics of TSR on the one hand and the unbundled network elements on the other hand in AT&T's strategy and business case.

We're going to start in the State of Pennsylvania, where like other places, TSR margins are modest. This is a good state for us. This is one where our wholesale discount is 25.9 percent. And when you stack the revenue next to the cost, you see that for a consumer averaging 20 dollars of local exchange service in Pennsylvania, we have a cost of goods sold of $14.81. Gives you a chance to market a combined local and long-distance package to this customer, gives you a fighting chance perhaps of recovering your marketing and billing and customer care costs incrementally to what you're already doing for long-distance. But it's tight. I guess what you say is it's a lot better than is used to be in Rochester where on that trial we have began to a five percent discount and the pink stack would have been 19 bucks.

But now let's look at the unbundled network element platform in the same state. We'll stay in Pennsylvania. Admit it's a good state for us. We're going to go into a high density, low UNE price zone. We're going to buy all the elements, recombine them to make global service out of the elements and assume we're doing this to a consumer that buys $25 of long-distance and five dollars of local toll service per month. And now what we end up with, stacked next to it, is quite a different picture. Our cost of goods sold on that platform is $16.03, slightly above the TSR cost. But our revenue is $33.50. Consisting of that same 20 dollars in local that we collect and $3.50 in the interstate subscriber line charge, which under FCC rule comes to the provider under the platform, and 10 dollars worth of access, which was otherwise being paid to the local carrier on the 30 dollars of toll this customer was using. So we have widened our margin on the UNE P by more than twelve bucks over what we had on the TSR side.

Where this company assigns this margin, how you assess this business opportunity, depends on what business you think we're in at AT&T. If you're a division that thinks your business is local exchange service, that is, you're after the 20 dollars, then you say, wow, I've got an all in, net cost of service that is defrayed by that extra revenue I collected, taking that away from the 16 dollars, I'm not paying more that 2 and a half dollars all in for the cost of goods sold to let me go chase the 20 dollars.

A little more accurate way of looking at our local business might say it's not local exchange. It's local network. We're going to change all the revenues that move over local network facilities. In that case I just bought a $33.50 revenue screen for $16.03 cost of goods sold, a discount of 52 percent. Or if you're in one of our sister divisions, say Gail McGovern's consumer long-distance, she might look at it differently. She might say, Good. For the same $16 that Harry Bennett paid to earn his 23.50 of end user collection, I just had my access reduced by $10. I improved my margin on a $30 toll customer by $10 because I don't have to pay access anymore outside the company. And Harry still has the distance between 16 dollars and 23.50 to recover his further costs, which is a 32 percent discount in and of itself. Or if you're Bob Allen you say, I don't care how you all allocate those costs among the divisions, it's all mine. And what I see is a 53.50 cent revenue screen, we saved 30 dollars of toll revenue, we add 23.50 of local revenue, and we traded that crushing permanent access cost for a platform cost, plus a little bit of intercity transport cost represented by those yellow dots.

None of this by the way is to say that we can't make some business out of the TSR side of it. On the TSR side, you still have some very attractive long-distance customers, in this case

the same $30 toll customer stacked up on top of that local revenue and that local cost. But now you're still paying access, which is why the pink bar goes up as much as it does. And you've lost your opportunity at 3.50 cents for the subscriber line connection recovery. Just another way of showing that your 13.50 better off on the right-hand side then you are on the left-hand side. And you know, this can go on for a long time. We could really have fun. How about a 75 dollar toll customer with 5 dollars of intrastate, intra-LATA toll? Now you move your cost of goods up to 19 dollars but you move your true local collections to 50. I'm dealing with a 64 percent discount, as you see, the higher the toll usage the more pronounced advantage of this platform. And you've got lots of room in there for some sensitivity around the existing costs and prices of the platform.

Having said all that, I want to suggest that none of this is the right way to look at the new AT&T's business. We are more than an all distance business. On top of that all distance stack of revenue we intend to add Internet service, information services, we intend to add anything that requires local connectivity. And we can do it without adding local connectivity costs. It's simply a matter of putting a couple extra pennies on the transport, but the basic connectivity platform stays there in the solid pink. It makes you look at our business in a different way. It's a two-fold business. We're local connectivity and it platform costs and anything and everything that comes after that connectivity.

Clearly there are huge advantages to that kind of business when you use the unbundled platform. It makes that local all distance service much more attractive, makes us indifferent to what happens in access for Interest, gives us an outlet for the new services, let's us work down the pink costs by replacing the

RBOC elements with our own switch or our own wireless loop when the economists say so or when we want to differentiate our services. Frankly, all of us, you and the business are probably going to have to work on a different way to keep score. We aren't going to be able to allocate that connectivity cost among our businesses any more decisively and definitively than we've been able to allocate the cost of the local loop for 125 years in the industry.

Look, with all that opportunity, what are the public policy threats to AT&T's going forward business? One I hear most asked about is the eighth circuit. And sure some national uniformity would be useful if we can get the FCC's jurisdiction restored in that appeal. But most of us are lot less concerned than we used to be about what's going to come out of St. Louis. The first piece of the business model we've been looking at here, rest on the unbundling of network elements. And that's something that congress built into the new Telecom Act. That's not something the courts can say we don't want. Congress said, you got to have unbundling. So that's the law. And we feel pretty secure about that one.

The second piece of this model depends importantly on a principle that says, you don't pay access if you provide service over an unbundled element platform. Again, that's within the FCC's interstate access jurisdiction. That isn't a local entry matter. Probably that's not even properly before the 8th circuit right now. At least to the 70 percent of access that is interstate. And by the way, the 30 percent that is intrastate so far most of the states with only a few exceptions have gone along with the FCC rule and said no, you don't select intrastate access either when you're providing a platform and not a per minute connection charge.

So what we ended up with in the 8th circuit was a lot of arguments over jurisdiction; fed or state. That state as it turns out did just fine without that preemptive federal jurisdiction. Perhaps it was seeing those results, perhaps it was doing the math on the platform. But the exchange carriers in the full argument added some substantive pricing challenges to their appeal. They say you can't use the combined elements for local, you can't use -the forward-looking costs. That's unconstitutional or prohibited by the statute. It wouldn't be serious, at least more serious if we got a reversal on those grounds. But frankly the states did not join those challenges. The bulk of the argument has been on jurisdiction and we feel good about our chances on the substantive issues in the appeal.

Let me say here the biggest threat to this kind of business plan isn't public policy directly. The biggest threat is really implementation. Can we get at this stuff? Can we order it? Can the local exchange carriers provision it? What we have, incidentally, are the commissions doing their part again. 95 percent of the access lines are subject to orders that the local exchange carrier provide us with electronic interfaces for ordering and provisioning the elements and the service. Not only automated but at parity with the way the LEC provisions its own customers, through its own systems. We're getting the right rules in place about this, too, in the regulatory arena, but are the exchange carriers ever going to get us up and running? Well, we would say that depends in the first instance on incentive. And to show you the advantage of getting the incentives right, we have to turn to the sad case of GTE, which illustrates the point for any nonRBOC territory. The Telecom Act didn't get it quite right here. They left GTE free to get into the long-distance business, even as it continues its local exchange monopolies, and they are accumulating customers rapidly. They have got no incentives to cooperate with anybody

else in getting those exchanges open. Quite the contrary, the longer they're closed the better it is. They're the most active challenger of the Telecom Act. They have some of the highest access rates, some of the highest element prices, some of the slowest implementation on the entry conditions. Frankly, we've got to do more than we're doing. At the moment we're waiting for the Telecom regulatory processes under the act to play out before we look at testing the that kind of behavior elsewhere, such as in the antitrust courts.

Are the RBOCs doing it any better? After all, these are the ones that have the incentives in the right place. How well can they be expected to perform? I tell you that's going to send us over to the third objective, which is to assure that we don't have long-distance entry before the RBOCs open those exchanges realistically.

This is a subject where the industry has spent a lot of words without necessarily advancing knowledge. So I'm going to try to stick to what we do know about RBOC entry. And it starts here. We know under the new act this is a four hurdle race, and these are the hurdles. First, you have to implement the local entry checklist, fully implement. Second, you've got to be facing some actual facilities competition for both business and residence customers. Then you've got to submit to a DOJ evaluation of conditions. And finally, you have to win the FCC's determinations that your entry to long-distance is in the public interest.

Now, three out of four of these hurdles, B, C and D, remain very speculative. How much competition is going to be required out there? We say, nontrivial, everybody agrees. But you can't really look to the act to define it because it didn't.

What DOJ test is going to be used in their evaluation? We hope it's like the MFJ, that it starts with an analysis of whether there is uncontrolled market power locally. How is the FCC going to weigh the public interest factors? We think that the FCC recognizes how important incentives are and how undermining it would be if premature entries were allowed to reverse the incentives. But at this stage, who knows. All I can do is argue the case and I'm not going to do it right now.

That's why we are spending most of our time working the first issue, the checklist. The checklist is much more granular. We know what it is. We know that it's not just an agreement to do it. It's not just a theoretic availability out there. It needs to be fully implemented. Those are the words of the Telecom Act.

For some of the conditions in that checklist, you get an obvious yes, no. The RBOCs know how to do it and you know when it's been done. It's like dial parity or number portability.

Others are just as important but they're proving a lot more difficult for both sides. And chief among these difficult items are these operating systems for ordering the TSR and the unbundled platform. This has shown up in the industry as a huge problem.

Automated TSR ordering right now is in the early stages. It's only a very few states. Automated unbundled element platform ordering is up and running in no state. Not a single state met the FCC's January 1, 1997 deadline for having the interfaces operational.

We are focusing the PUCs, the FCC, the DOJ on these issues. We're trying to establish metrics and standards where none exist. We've supported the creating of an industry coalition to

attempt consensus on a set of quantitative measures that are based on really very common sense business needs. Can we order the stuff automatically? Will the exchange carrier accept the orders in the quantity we submit? Those the customer get service on time? Is the billing accurate? Does the service work? Can you get it fixed? Our view of success here is almost exactly what FCC chairman Reed Hundt told the state commissioner in November of last year. Provisioning limits must not materially limit the flow of customers from the BOC to its rivals. And folks, the systems do that right now you're going to hear more about it tomorrow from our local service panel. For me, you're going to hear that having said all of what I just said, I still can't answer what you would most want to know about this issue. When do the RBOCs get in? Most of it, please recognize is out of AT&T's control. We don't do the checklist compliance, they do. We don't make the public interest determination, FCC does. I can tell you the FCC and the PUC appear to be deadly serious about this. Ameritech Michigan demonstrates that. Ameritech relied on an unsigned AT&T agreement to show that the checklist was available. They didn't get to first base becasue you must actually be providing service under a signed agreement and neither of those conditions was true. Our position will be steadfast, fully implement that checklist, make big progress on access reform and show genuine competition and choice in your state. What does it mean for 1997 entry? I will say that on the current track no RBOC in our opinion is likely to meet the checklist and show enough competition to qualify for long-distance. They shouldn't get in.

Nonetheless, we've been promised a wave of applications in the second quarter of this year. Nobody ought to build a business on my prediction. So the prudent thing for us all to do is to be

prepared just in case some of those applications slip through the net and we get premature entry.

I promise not to talk beyond what I know on RBOC entry. That's it; new subject, access.

This is a large dollar issue for AT&T. Domestically, which is what we'll take first, we're looking at somewhere between a 12 to 13 billion dollar bill. Our historical record on driving down access through public policy is good. I might even say great. There is a twelve year history. And through a series of regulatory interventions and some smart network optimizing moves, we have moved the cost of access, conversation minutes, both ends, from 18 cents right after divestiture down to five cents on average right now. Even better, you will see that in 1995, the blue AT&T and the red everybody else crossed over, and we now enjoy a slight advantage over our competitors in regard to interexchange access.

But as we assess it, the traditional methods that got us that slope are beginning to run out of gas and still switched access is overpriced by seven or eight times. The local exchange carriers are collecting billions from the interexchange industry. The access charge has disguised the true cost of the service. They deliver a mass of undifferentiated subsidy that's impossible to target and it leaves the local exchange carriers with billions to turn right back on us in their competition in the future. For at least some of those reasons the 1996 act calls for reform. It demanded that any subsidies in these collections be made explicit, that funding be made competitively neutral, and that in our opinion anyway, charges for access be cost based. And that's why we're now in the midst of a very large FCC proceeding on reforming the traditional system. And I'm going to show you how AT&T argues its case in that proceeding.

Let's stay on the left stack, if you would, please.

I'm going to leave out the subscriber line charges. The exchange carriers collect something on the order of 7 billion directly from end users. The stack on the left is what the interexchange industry pays. And as we make it, starting from the bottom, there are to the nearest half billion we'll say there is two and a half billion of special access charges. These are dedicated circuits. Based on our idea of forward looking cost, there is another two and a half billion of actual cost based switched access in the stack. Then we would allow that for legitimate targeted universal service support, there needs to be another five billion dollars somewhere in the industry. And all the rest, another ten billion dollars or so, is excess. We're going to call that subscriber line overpricing SLOP. So we've got ten billion of SLOP in the system. Our ideal income is the middle column. Our ideal outcome is the middle column. We'll sign up to pay dedicated access on roughly the cost causative basis that's now charged. We will pay on whatever rate structure makes sense the two and a half billion of switched access that we use, actually related to cost. We'll pay our part of the yellow, the universal service subsidy, although we think that under the act, the tax base here needs to be expanded. And that when we get some additional payors in the next- the yellow should go down at least somewhat as a burden on the interexchange industry. And the SLOP just ought to go away. It's excess. It doesn't relate to cost based pricing and its not needed for universal service support. It's just needed to cover inefficiency or what have you. And in consequence, we will flow it through in our long-distance charges, but in the end, the interexchange industry will be relieved of more than $10 billion worth of the burden that we now pay in our access charges.

Okay. That's what we argue. Realistically, as we come near the end of this proceeding, we have to acknowledge that it may not happen. A lot of people think that is too radical a move. Other people think it puts too much pressure on local rates. Not to worry. We are working a strategy that allows us to win under other combinations of reform which are out there in the right-hand column as a for instance.

First and foremost in that strategy is to make the access charges portable. Whoever wins the customer collection the access. That was the basis for the UNE P demonstration we went through. If you're a facility based carrier or a platform competitor, you don't pay act sells to the LEC. You collect it. Same for the subscriber line charge. You collect it, not the LEC from the end user. And if you're serving one of the supported subsidized customers, you collect the subsidy, too. Your share of the yellow. That is in fact what the FCC is now denominating incorrectly the market forces approach, but it is in their sights and frankly we have won the portability once in the local interconnect order. We feel good about that part of the strategy.

Second piece of the strategy, if you don't take ten billion of SLOP out, at least take a large portion out. Everybody agrees we're not paying cost based access charges. A minute of access is the same as a minute of local service and we know from those arbitrations that that minute costs less than half a cent, not the two and a half or three or four or five that we're being charged in access. How would you get some of that SLOP out there? I suppose you could raise the subscriber line charge or you could just have the RBOC suck it up and take it and look for more efficiencies. We might even see the FCC putting what's left of the SLOP on a per line charge to the interexchange

carriers. But our position maintains - or continues to insist on a very large bouyant ante to the SLOP reduction.

Finall the third part of the strategy is surcharge for the subsidy for the yellow segment, whatever it is. We acknowledge here it might even go up. We're adding schools and libraries and rural health care facilities to the mix of supported customers under the new act. But even though it goes up or might go up, we could use some more payors like the RBOCs who collect the slick and have interstate corridor traffic and most importantly make it explicit and make it competitively neutral. That's what a surcharge on all carrier's revenues would do. We won't then end up with a relative disadvantage at AT&T.

When that's all said and done, and whatever combination of elements you get in the right-hand stack, here is what we think it's going to mean. To the industry, we think that all the put and takes are going to leave us with something less than the 20 billion dollars of burden we now carry around. For AT&T, on one day, we expect to be recovering any subsidy as an excise tax like charge on the bottom of the bill. We expect to be recovering any per line assessments against us right back as a per line assessment on customers. And we expect that due to some structural shifts and some outright SLOP reduction, our per minute access rate therefore will decline, and even as the market pushes that through to lower long-distance prices, we'll be benefiting from a handsome piece of stimulation on calling.

That's day one. On day two, I hope by now our strategy is clear. Starting on day two, we play the unbundled element platform game. We win our share of whatever stack is left as we win the customer on our platform or on our own facilities.

We'll know a lot more there in a couple months.

Let's now go to global. Double back on those principal policy objectives. Declare number one not an issue outside the country.

Alas, we don't have enough of a presence to bring down any regulation on us beyond our borders. Let's recognize we've been working outside the United States and inside for that matter on numbers 2, 3, and 4 in the same way as we have been working for domestic markets. What result? Mixed. As to opening none US markets, the track record is not great. As to preventing PTT entry here until the whole market is open, no better than spotty. As to lowering access costs which are settlements in international parlance, better. A lot better. We do very well here. But it's drudgery. It is working through bilateral negotiations one at a time.

What we are looking at this will season in this international policy work is a break through in all three objectives, which is the cause of a double play with the GATS trade agreement on the one side and the proposed FCC benchmark order on international settlement rates playing on the other side.

Let's take a quick look at the first part of that play. What GATS did for us is acquire commitments kicking in no later than the year 2000 to open markets covering 90 percent of the world's telecom revenues outside the United States. This shows you the whole world after GATS. The 35 percent U.S. we've always counted as open. Then there is another 45 percent of the world that just got committed to what we call full offers. That means that the countries commit to enforceable entry conditions. They eliminate ownership and control restrictions on second and third carriers, and they allow international facilities competition. Then there are 14 percent of the world's revenues, 44 countries, that gave us partial offers,

meaning that one of those three elements of competition I just named is missing or partially missing. Here you get countries like Mexico and Canada because they insist that ownership cannot rise above 49 percent. And then the last six percent of the world's revenues are those 60 odd small world trade organization countries, as well as China and Russia who are not members of the WTO.

What this represents to AT&T is a lot of opportunity. I would emphasize it as opportunity beyond having to set up intracountry telecom businesses with all the expense and investment that goes there. We have new opportunities here, such as the ability to terminate our outbound calling through competitive modes that are going to spring up in these newly opened countries and thus avoid we hope some of those high settlement rates. We also have an opportunity to do truly world telecom networking. Maybe hubbing through the United States. Moving traffic from country A to country F through the U.S., becoming to telecom what Atlanta is to air travel in the southeast.

The thing that let's us support GATS with this kind of fervor is that companion piece I mentioned, this proposed benchmark order for international settlement rates coming down from the FCC. That aims to move these high rates down, and it provides a protection for AT&T as well as opportunity. The reason we need protection is it's going to take some time for these GATS opening to take hold and show up in competitive market openings and gateways into countries. Meanwhile we're going to go on without some regulatory intervention, paying these very high settlement rates on our outbound traffic into those countries. Think of it as terminating access. Sure we make some back at the same level on the return traffic, but we are vulnerable to losing that kind of return profit if a PT and T

comes over here and sets up sub or strikes a sweet heart deal and diverts its inbound traffic to its favorite carrier.

The benchmark order, if properly implemented, would by and large give us some insulation from that. Here is what's happening as the FCC is tentatively proposing it. The FCC divides the world into these three categories of countries. High income, middle income, low income. It says to the world, you are outrageously high above cost existing rates there in the red bars, pink bars for each of the countries. Need to come down to a benchmark zone which has six to nine percent- six to nine cents per minute at the bottom. I've averaged it here as seven and a half. And a different top end of the zone, depending on whether you're high, middle and low. What's more, we'll let you implement on different schedules. We'll give you one year for the high income countries, two for the middle and four for the low income countries.

And what that's going to do again is reduce the terminating access we pay to the foreign countries. It will also reduce the access we collect on the incoming traffic. But because we have so much more traffic out than in, that increased profitability outbound and more that offset the reduced collections on the inbound. And we aren't threatened anymore by the incoming traffic diversion. At cost in fact we're absolutely indifferent.

Now, besides protection of the existing revenue streams, there is a lot of room to make money in this game, because of our net outbound traffic advantage. And we're going to try to show it to you this way. Up there on the top, the horizontal bar is what we're paying in 1996 net for international settlements for our top 65 countries which cover about 80 percent of our international revenue stream. About two and a half billion dollars.

Now, if you go to the middle downsloping line, if over a five-year period we pay outbound at the high end of the FCC benchmark and collect that same rate coming back in, we save a billion six hundred million on what we currently pay net to terminate our traffic overseas. If we go to the low end of the FCC benchmark range, we pay seven and a half out and collect seven and a half back, we're going to have 2 billion. And something we don't like to think about, but if it's asymmetric and we pay the high out and the low in, then you're on the pink line and we've still got more than a billion dollars of savings. Indeed if we have to pass the better part of that through to end user rates, we still think there is massive stimulation left in these long-distance rates overseas which have been too high because of these inflated settlement costs.

I guess the point is that we have a lot of room below that yellow line to accommodate even an uneven implementation of the benchmark order and some GATS delays before this would ever float above that line. There is clearly much more opportunity here for AT&T than there is risk.

In fact, I got to say, in this scenario, the place to be is in AT&T's shoes. We're already competitive in the United States. We know how to compete. We're going to have new opportunity in other people's monopoly markets. We've got more outbound traffic than in. We've got access coming down. The place not to be is one of them. The monopoly PTT. Your market is about to be attacked for the first time and the mother's milk of excessive settlements is about to be taken from you.

So I can't wait for this game to begin.

Look, opportunity after opportunity. I'm going to stop with that. I want to wind up by saying we are winning these

opportunities now because our public policy positions are lined up with customers. Giving customers more choice and more value.

After a lot of thought and more importantly after years of losing public policy fights on the other side of the equation, I can tell you that in a prepluralistic society, it's the customer friendly position that wins the contest in the public policy arena. And with that as our touch stone, ladies and gentlemen, and with our business lined up behind it, we're winning not just opportunity out there, but we're winning positions that let us be ultimate winners no matter how some of the uncertainty breaks around the fringes of these proceedings. We are creating frameworks for opening huge new markets here and there. I'll tell you for years we're going to be enforcing those rules as we break down the existing monopolies. But I'll also tell you that for the first time I think we see the day when the regulatory obstacles are not limiting AT&T's opportunities.

Soon we're not even going to need fundamental change out there in public policy. We're just going to need the enforcement of the frameworks that we're setting up right now. So in this public policy world, in this mystical world of regulatory work, I can assure you that AT&T has gone on the offense. We're there now and forever more. So thank you very much and we'll start with your questions if you have any.

A SPEAKER: John, let's take the worst case out of the 8th circuit and ultimately the Supreme Court, lets say rebundling does not live. How much investment would AT&T have to make in switches or other elements to still be able to get those kinds of financial results? And how long would it take you to get the pieces out in the field to be able to get those kinds of results?

JOHN ZEGLIS: I'm going to give the nonanswer. I cannot think of bundling falling in the 8th Circuit in the Supreme Court when it's already commanded as a matter of the Telecom Act of '96. Pricing, sure that's an issue, but not unbundling itself. But rebundling? Rebundling, once we provide the service on a platform we are not going to pay the access because that's a matter of the FCC interstate access juridiction. What we are seeing in rebundling challenges is the state saying, Georgia is a good example, if you rebundle the platform you have to pay TSR rate, not the unbundled elements rate. So if you have got the elements but had to pay the TSR rate and didn't have to pay anything extra fo the additional elements, then the increment is just between the TSR all end price for local, and whatever the unbundled elements price might have been. If you have to pay additional element prices on top of your TSR, we haven't run the numbers on that, and I'm going to defer any elaboration on that question to Harry Bennett, who can also give you tomorrow some scope of what the investment might look like, but it is not within our plans.

A SPEAKER: My understanding is in places like Louisiana you basically would only have to throw in operator services or one item in order to get the unbundled rate, and that's a used profitability issue. My question is, what does it take for you to do that everywhere?

JOHN ZEGLIS: I don't know. But I will seize on your remark, this is what we call N against N minus 1, even places that we can't use the entire recombined platform in those very few jurisdictions, if we add one element, all their elements minus 1, then I believe we still get platform prices and not into TSR mode. Yes?

A SPEAKER: My understanding is that many of the states' orders are actually interim orders, I'm wondering to what degree there is risk when the final orders are issued, it's not as good as it looks right now and also if you could articulate how many are-

JOHN ZEGLIS: I'm going to go to extended panel to give you exact numbers. I'll tell you that my opinion, having watched this, is we stand to gain probably as much on finishing off the unfinal orders as we stand to lose as in the case of Utah, which said that was a temporary rate, that was in the case of California, which they said they would come back to the rates for GTE in a 1997 proceeding. And as in the case of any nonrecurring noncost base charges, which we want a second bite at the apple for. As to how many of the solid blue, gentlemen, the '82 access lines covered are still subject to some further dealings in the state commissions we are going to give you our Chief of Staff to the local service division, our major dome in government affairs in the state.

A SPEAKER: We have 27 decisions today of which I think four or six are final, eleven are interim. Our expectation is, our prior history is the results in final tend to be a little bit better than even the results in the interim. We are very very confident. Using John's paradigm of access lines, I think it breaks out in the 80s for final and the low teens, if at all, in the teens, on the interim, so we feel pretty good about where we stand today.

Just to follow up, if I might, John, on the question over here about minus 1, we had a lot of success with the 1 being operator services and DA in our arbitrations and our expectations are that if it does not turn out to be N minus 1, we feel good about the opportunities, given our OS platforms.

A SPEAKER: Rick, Goldman Sachs. You said you didn't want to speculate on RBOC long-distance entry, but I'm going to ask you anyway. Could you, in light of the fact that the famous 13 words that you tried to get put into the bill did not get there, and you used the phrase the sequential and other carriers used sequential, the Bells of course all it simultaneous and I guees I'm just trying to ask, you know, your sense on the timing and where you see the sticky points going forward, particularly for BC and B, which you said were less specific.

JOHN ZEGLIS: Well, I stand on a lock on sequential, you can't have simultaneous if the requirement is to have the checklist fully implemented, an agreement under which the competing carrier is providing service and actual facilities competition running out there in both the business and residence markets. I know there is an issue here of rhetoric about simultaneous and sequential, but I think we have got that one knocked in the act.

Now as to the missing 13 words, what we are referring to here was a description of how much facility build-out there had to be, and it was like comparable to the exchange carriers' own operations in the state. That was not in the final version. It was taken out because of a misguided fear in our opinion that that meant a state-wide over-build, one for one as into every home and business in the nation. And we were assured at the time that nobody with a full deck would think that that means one loop or one switch, obviously we are looking for nontrivial, local facilities competition significant enough that it puts checks on unrestrained monopoly pricing that the carriers might otherwise use. That's why I say it's very hard at this moment to get into how much more than nontrivial is required and less than a full state-wide build-out.

A SPEAKER: If it is trivial becuase I'm guessing-

JOHN ZEGLIS: Nontrivial.

A SPEAKER: If it is a trivial degree of competition, a year or two years from now, is it the FCC or the DOJ or the state that you see standing in your way?

JOHN ZEGLIS: I think they're all standing in the way of the RBOCs.

A SPEAKER: Right.

JOHN ZEGLIS: They all get a bite of the apple. The state starts by affirming the checklist is implemented, that all of these checklist conditions are being provided pursuant to a signed agreement to a competing carrier. Probably they do a lot less on the extent of competition than the other two. DOJ, I think they are going to look at it. That's been their bent now for 15, 20 years. So you will get a look-see by the Justice Department, but they don't make the decision. They render an opinion which has to be given substantial weight at the FCC. Your question in some respects is easier than my answer. The FCC makes the final determination on that one with the state and DOJ. Who has got a mike?

A SPEAKER: A few weeks ago Bob Allen said access charges savings would be passed through to customers; is this a policy that you are actually promoting publicly in regulatory form? And the second questions is, John Walter spoke about best in class cost position. And what you showed us was about cost reductions but didn't talk about how other competitors might be positioned differently. For example, what will the BT/ MCI

merger impact on cost relative to perhaps eliminate settlement and hubbing between those two companies?

JOHN ZEGLIS: The access flow through commitment is probably not our policy, it's a regulatory policy. That is to say we are at a point now where in order to get fundamental change and relief from that burden we are going to have to give the flow-through as the quid pro quo to get it. How much of an additional commitment that is over market which has required us to to flow access and more through every year for the last 12 years, I don't know, but you get the drift there of my opinion.

As to cost advantages, on the access I think was your question. BT/ MCI was your choice, we also worry about things like NYNEX, Bell Atlantic, and the cost advantage we worry about is not our access against long distance companies access, it's the two-ended access advantage or even a one-ended access advantage that a carrier gets when it both supplies its own access and charges it, so the left pocket -right pocket transfer to us is a chance to squeeze by bidding up access and bidding down retail.

The answers are we are very concerned about that when you are dealing with local exchange carriers here, especially when you are in their regions. Traffic for both ends of the call, like NYNEX and Bell Atlantic, would expand a lot of territory to become subject to that. You have exactly the same thing going on with BT/ MCI, although it's one ended it's in Britain, so yes, we are worried, yes, we are in the FCC, it's a condition to closing merger. They need to bring the settlement rate down, from the existing 11 cents to the bottom of the FCC rate, 6 cents, which we think is close to the cost of access in Britain.

A SPEAKER: Basically between those two, can't BT/ MCI say we are going to do a paper transfer of money in essence making it zero, which says you are not the best in class, especially if they begin hubbing?

JOHN ZEGLIS: On this we won't have access until MCI metro substitutes all the lines, they have the same problem we do. On the other side they have the advantage of having it in their own enterprise. Unless we request, get access to the access, at cost, which is what we think 5 cents might yield. Yes, we worry that they will have that advantage and they can use it to price squeeze. So to get the answer down so they don't have room to price squeeze us since it's cost to both of us.

A SPEAKER: Todd Jacobs. You made the compelling case about the application of the FCC benchmarks reducing your settlement costs over the next five years. I assume that was using static minutes?

JOHN ZEGLIS: The same minutes that produced the 2 and a half billion.

A SPEAKER: My question is, isn't the risk to international information the risk - for the next- first time as opposed to the last ten years or 15 years, that prices could fall just as fast, if not faster, than settlement rates, given new networks springing up internationally, new placings to land traffic, you said the probability of sweetheart deals with local subsidiary networks in the U.S., et cetera, what's the risk that if the international calls have too much profit per minute built in that could be coming down over the next five years?

JOHN ZEGLIS: I think two risks. The one I spoke to was that our profit on a current international call that we earn from a

U.S. subscriber outbound comes in two bites, one is what we collect minus what we pay, netted against what we collect from the incoming when the call comes to us as part of our proportionate return from that PT and T. What we are working on through the settlement case here is to make us indifferent to whether we get whip-sawed or traffic diverted disproportionate return. That at least puts us in control of our own destiny, we win the outbound call, we win the profit and we don't save all to somebody else's idea of return traffic diversion. I think, I think the benchmark settlement order and the FCC's rules against whip-sawing until it is in place.

The second part of your question I think is market, when we do get these down and in control of our destiny, what about margin of outbound calls, aren't we all going to have a go at lower prices to earn more customers? And for that we look forward to Gail McGovern and Jeff Weitzen's answers this afternoon on their panels.

A SPEAKER: Yes, a question. What is your view of three-way mergers of RBOCs? And secondly, your chart shows like 4 billion of access reduction on the right-hand side, which I guess was your compromise solution. Is that instantaneous or over time? How do you look at that? What do you think is the really most likely on access charge reform?

JOHN ZEGLIS: All right. My view on three-way mergers of RBOCs first is if they eliminate competition, potential competition in local Bells like NYNEX and Bell Atlantic threatens to, that three-way is worse than two-way. In addition, it will give more opportunity to price squeeze us on both ends of a call because three-way mergers will have more intracompany calling than two-way mergers have, so if it's bad in two-way for the reasons we have suggested at NYNEX, Bell

Atlantic, it's worse in three-way. Now, on the access reduction, the right-hand chart was over there, so that you wouldn't draw a line back and get any estimate on what we expect to have. That was just to show lower than what we pay now and higher than Nirvana. As to any predictions on how this might come out, I'm going to let Jerry, our senior officer, shepherding the FCC in our Washington operation, add any refinements he wishes to or give a no comment. Your choice, Jerry.

A SPEAKER: I would like no comments, but let me try for a minute. We really think there are three ways we can win with access charges; one, you get immediate reduction and the SLOP is taken out of the system, which is right public policy. Again in line with what the consumers deserve.

Second, a significant initial reduction. We have identified on record to the FCC a number of ways in which using the current proceeding, the current record, before the commission, that they could reduce over 4 billion in access charges immediately. Those include just taking retail end user charges off the general support facility charges which are embedded inappropriately in access charges by redefining the cost of capital, which is part of the price cap proceeding, so we do believe there is ample opportunity for the commission to right now reduce access charges significantly tied to that, also as you move cost explicitly to the end user, as you would with universal service charges, as you would with some of the per line charges and some of the other end user charges that could be put on the bill, you are reducing per minute access rates significantly. Again that is beneficial to the company.

And the third way we win that, John I think explained very well, was the unbundled elements platform. We don't pay access when we use the unbundled elements platform, if the

FCC is consistent with what they said thus far. We are in a good position in access charges both on the FCC order on the 251 order did spell out what John said they are on the record before the Court, before the FCC is already making those determinations; and second on the pricing methodology they already looked for the pricing to be forward looking incremental cost and that's what the legislation calls for, is that we pay only the costs and don't add subsidies. So we believe we are in the best position initially to win and ultimately to survive any challenges. Again the states have been supportive, in the joint board they said you should have forward looking cost. We think we are in a good position on those.

JOHN ZEGLIS: Jerry, do you think there is a snowball's chance that the RBOCs would allow a three-way merger?

A SPEAKER: I think a three-way merger is going to raise more than arithmetic possibilities of obstacles being put in front.

JOHN ZEGLIS: Last question.

A SPEAKER: Jack from Solomon. First of all, John, if you could settle with our friends at Ameritech so we could get the transcript from the conference with our friends in December.

JOHN ZEGLIS: We will be accepting service of process at lunch for any agreed analyst.

A SPEAKER: Exactly. On the access, something Jerry said or this per line trigger, a corollary thought from the discussion of maybe putting the onus of access charges, whomever collects it, on the originating as opposed to terminating end, which the theory being, I guess, you know, competitors can control the

originating end much more so. First of all, do you think that will occur?

Second of all, in your bar charts there did that include that phenomenon, and if it didn't, I would guess that for you and the other IXCs in so much as the onus has shifted toward the originating versus terminating ends, that would add above and beyond whatever you would think you would chop out of that excess.

JOHN ZEGLIS: Jack, that's hard to respond to. The bar charts were illustrative of mega movement and didn't account for shift of access from one end to the other. Our view of terminating access for the moment is when we are on the platform we are going to get as much as we receive. Whatever it is it completely washes in terms of payment out and collection in. It's almost like bill and keep. As to what do you want to know, the cost shift in the FCC moves it back on to the originating? I don't think it's going to change much of what I said. I think it's just a shift in whether we pay it on one end or the other we have to work it off by the platform.

A SPEAKER: I guess in theory you are going to go after certain customers, so in theory you will have more of a platform on the originating end, then say the random number generator on the terminating end.

JOHN ZEGLIS: It certainly makes the blue stacks I had next to the UNE customer higher and more attractive if we move it on the front end and eliminate it. Jerry, do you want to respond?

A SPEAKER: Reed Hundt and the other members of the commission have recognized the fact if you are going to use a market base approach, it depends on the market, there is gr[illegible]ter

competition on the originating end than the terminating end. I a speech last Tuesday, Reed Hundt reiterated you would expect you would reduce access charges more on the originating end than the terminating end at the outset because that would be more responsive to what you need to do.

Th other thing is it does actually help those stacks as we get into the market while we are signing people onto the MB platform, it does help us to have terminating end access charges reduced to a certain degree.

A SPEAKER: I think you meant reduced on the terminating end.

JOHN ZEGLIS: I have to get off here. Last word to my colleagues and secondarily to the analysts, our president wants me to remind my colleagues, the 2.6 billion cost reduction does not include any advantage that we deliver up here on this settlement on the access so for you all redouble your efforts and for the analysts, you can make that additive. Thank you very much.

CONNIE WEAVER: Thank you, John. Next we are going to take a little bit of a break and go to lunch. Let me give you a couple of logistical details. We have a message center set up outside in the mid hallway as you are walking down the foyer toward the main registration area. So please check there if you have any inbound faxes or messages, they be posted there.

We also have copies of this morning's speeches. Bob Allen's speech and also John Walter's speech, if you would like to have a copy, at that same information desk. They will be available for you. We will have an informal lunch today, we will make it fairly quick, no remarks at lunch, it's an opportunity for you

to meet and get to know some of our senior team that's here today, they will be sitting amongst you. That will be over where you registered where you came in the main lobby, some tables set up in the lobby, but also in Cuisine and the Watson's restaurants there will be people to tell you where that is. I would like to reconvene at about 12:45 today, in about an hour and 15 minutes. Enjoy lunch.

Thank you.